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THE N. Y. STATE CATTLE SHOW AND FAIR FOR 1846

WILL BE HELD, UNDER THE AUSPICES OF THE STATE SOCIETY, AT AUBURN, ON THE 15TH, 16TH AND 17TH OF SEPTEMBER NEXT.

We have not space at command for all the details. The list of Premiums does not appear to vary materially from that which has for many years been offered, and with which the public is familiar.

ON FARMS.

For the best cultivated farm of not less than 50 acres, exclusive of woodland, regard being had to the quantity of produce, the manner and expense of cultivation, and the profits:
First premium.....$50 | Second do.....$30 | Third do.....$20
The persons making application for these premiums must submit written answers to a series of questions, printed copies of which may be obtained on application to J. B. Nott, Secretary.

EXPERIMENTS AND ESSAYS.

For the most satisfactory experiment of stall-feeding cattle, with a full detail of all the circumstances....$20
For the most satisfactory experiment in converting green crops or other vegetable matters into manure, with full details, &c..... 10
For the most satisfactory experiment made for increasing manures in forming compost..... 10
" " " for top dressing grass..... 10
" " " subsoil plowing..... 10
" " " eradicating Canada thistle..... 10
" " " draining..... 10
" " " irrigation..... 10
" " " on the improvement of seed wheat, by culture and propagation.. 10

FARM DWELLINGS.

For the best design, accompanied with plans and elevation, combining convenience, economy, and good taste: For best.....$15 | Second best.....$10
Competitors for the premiums on Experiments and Designs must forward their manuscripts to the Secretary, Albany, previous to the 1st of December, 1846, free of postage.

Next on the list come the Premiums offered for CATTLE, which, by the trustees or Committee for offering Premiums, are *classified* in the following order: 1. Durhams; 2. Herefords; 3. Devons; 4. Ayrshires; 5. Crosses of Native and Improved; 6. Native.—Then come other descriptions of Cattle for which premiums in money, ($15 being the highest amount,) and Volumes of the Transactions of the Agricultural Society of New-York are offered. These other cattle are *working-oxen, three year-old steers, two year-old, do., yearling steers,* and *fat cattle,* and *fat sheep.*

In Massachusetts it would seem that cattle are not valued according to the preceding classification, but how far this difference in the estimation of the farmers of the two States is to be referred to corresponding differences of circumstances, such as pasturage and food, and the uses and objects for which cattle are reared—as, for instance, more in one State and less in the other, for the pail, the yoke, or the shambles—we cannot undertake to say.

There, in Massachusetts, that ancient society suspended their exhibitions for a time, and appropriated their funds to the importation of Devons and Ayrshires.

The next premiums on the list are for HORSES—in the following order: STALLIONS—The best one for *all work,* for *blood, draught, three year-old stallions, geldings, matched horses, and mares.* It is to be presumed that the exhibitor for the premium for best gelding and matched horses, at least, is required to be also the breeder of them; for surely, there could be no great mer-

it, except that of luck and a long purse, in getting possession of the best of these. Such horses have been exhibited on some occasions, by professional horse-dealers taking the premium; and being sold under the prestige of that, have very soon after proved unsound.

When they have been bred and reared by the farmer, who exhibits them, they are living witnesses of his having paid attention for a length of time to that branch of rural economy; but even that is not to be indiscriminately encouraged, as not being economical in all cases.

SHEEP.—This animal of so much real importance, as connected with individual profit and national independence, comes next on the list; and the premiums are offered for the best long-wooled, middle-wooled, (which includes the "South-Down, Norfolk, Dorset, Native, &c.") Merinoes and their grades, and Saxons and their grades. Next come the premiums for

SWINE.

Best boar, over 10 months	$10.	Best sow	$10.
Second best	Colman's Tour.	Second best	Colman's Tour.
Third best	Diploma.	Third best	Diploma.

Best lot of pigs under 10 months, not less than four in number..Colman's Tour. Second best..Diploma.

In awarding premiums on hogs, reference will be had not merely to size or present condition, but to that proportion between bone and meat which promises the greatest value from the least amount of feed.

Except that with his $10, the winner of the first prize could buy two sets of COLMAN'S Report, the "second best" would in this, as in all other like cases, get the better prize of the two. If he could not have both, where is the father of true spirit and discernment who would not prefer to give his son the *book* rather than the *money*?

Then follow the premiums for best POULTRY: $3 each for best lot of *dorkings*, black Polands, large fowls, ducks, geese, and lot of "best and greatest variety of barn-door fowls, owned by the exhibitor."

Next, and more useful than any that precedes, is the following:

FARM IMPLEMENTS.

Best plow*	Silver medal.	Second best straw cutter	Diploma.
Second do.	Diploma.	Third do.	Vol Trans.
Third do.	Vol. Transactions.	Best corn and cob crusher	$10.
Best subsoil plow	Silver medal.	Second do.	Diploma.
Second do.	Diploma.	Third do.	Vol. Trans.
Third do.	Vol. Trans.	Best clover machine	$10.
Best farm wagon	Silver medal.	Second do.	Diploma.
Second do.	Diploma.	Third do.	Vol. Trans.
Third do.	Vol. Trans.	Best flax and hemp dresser	$10.
Best harrow	Silver medal.	Second do.	Diploma.
Best cultivator	Silver medal.	Third do.	Vol. Trans.
Best fanning mill	Silver medal.	Best horse-cart	Diploma
Second do.	Diploma.	Best ox-cart	do.
Third do.	Vol. Trans.	Best horse-rake	do.
Best horse power	Silver medal.	Best ox-yoke	do.
Second do.	Diploma.	Best farm-harness	do.
Third do.	Vol. Trans.	Best saddle	do.
Best corn-stalk cutter	Silver medal.	Best grain-cradle	do.
Second do.	Diploma.	Best six hand-rakes	do.
Third do.	Vol. Trans.	Best six hay-forks	do.
Best threshing machine	Silver medal.	Best six grass-scythes	do.
Second do.	Diploma.	Best six cradle-scythes	do.
Third do.	Vol. Trans.	Best six dung-forks	do.
Best drill barrow	Diploma.	Best six axes	do.
Best straw cutter	Silver medal.	Best six hoes	do

Best hay rigging.....$5

* The trial of plows will take place on Tuesday, September 15th.

For the best and most numerous collection of agricultural implements.....$10
Also, for the best and most numerous collection of agricultural implements manufactured in the State of New-York, by or under the supervision of the exhibitor.....Silver medal.

The PLOWING-MATCH, which always proves a very interesting point in the exhibition, is thus provided for and regulated.

PLOWING-MATCH.

First premium	$15	Third premium	$10
Second do.	12	Fourth do.	Colman's Tour.

Fifth premium.....Vol. Transactions.

For boys under eighteen years of age:
First premium.....$10 | Second.....$5 | Third.....Vol. Transactions.

One-fourth of an acre will be required to be plowed within an hour and a quarter, with fifteen minutes for rest—the furrow-slice to be not over 12 inches wide, nor less than 8 inches in depth. The plowman to drive his own team, and the furrow-slice to remain as left by the plow.

BUTTER.—On this part of the exhibition the trustees appear to have bestowed particular care, properly deeming it a branch of economy deserving in this State peculiar attention. Steamboats and railroad facilities have given it great extension since 1839, when the dairy products of the State were valued at ten and a half millions of dollars.

We should not copy all the regulations laid down for competitors in this instance, but that they may afford useful hints for other societies and occasions.

BUTTER.

For the best lot (quality as well as quantity considered), made from five cows, in 30 successive days—25 lbs. of the butter to be exhibited.....$25
Second best.....$15 | Third best.....$10

Compliance with the following rules will be strictly required of those who compete for these premiums, viz:—The cows to be fed on pasture, green corn-stalk fodder, or grass cut for the purpose, only. No grain, roots, or slops, of any description, to be fed during the trial, nor for fifteen days preceding the trial. The cows to be owned by the competitors previous to the 1st day of February, 1846. The milk drawn from the cows on some one day during the trial to be accurately weighed and measured, and the result stated A sample of at least 25 lbs. of the butter so made to be exhibited at the fair at Auburn, for the inspection of the examining committee. The particular breed of the cows to be stated, if known, and the method of making and preserving the butter. A certificate signed by the owners of the cows, and at least one other person who assisted in milking and making the butter, detailing the above particulars, will be required.

The executive committee believe that few if any premiums offered on neat cattle will result in greater benefit to the farming interest than those on the products of the dairy, providing fixed rules, requiring uniformity of feed, be faithfully enforced. The increased list of premiums is offered with the hope that it will induce extensive competition throughout the State. Let this object be accomplished, and an opinion, approximating to accuracy, may be formed by the public which of the several breeds of cows are the best for dairy purposes; and, from those that prove the best, farther improvement may be made.

Best 25 lbs. made in June.....$10 | Second best.....Colman's Tour
Second best.....Colman's Tour. | Third best.....Silver medal.
Third best.....Vol. Transactions. | Fourth best.....Diploma.
Best 50 lbs. made at any time.....$15. | Fifth best.....Vol. Trans.

The claimants for premiums must state in writing the time when it was made; the number of cows kept on the farm; the mode of keeping; the treatment of the cream and milk before churning; the mode of churning, winter and summer; the method of freeing the butter from the milk; the quantity and kind of salt used; whether saltpetre or any other substances have been employed.

The butter offered for premiums must be presented in butter tubs, jars, or firkins.

CHEESE.

One year old, and over.

Best 100 lbs.....$15. | Third best.....Silver medal.
Second best.....Colman's Tour. | Fourth best.....Diploma.
Fifth best.....Vol. Transactions.

Less than one year old.

Best 100 lbs.....$15. | Third best.....Silver medal.
Second best.....Colman's Tour. | Fourth best.....Diploma.
Fifth best.....Vol. Transactions.

Those who present cheese for the premiums offered must state, in writing, the time when it was made; the number of cows kept; whether the cheese was made from one, two, or more milkings; whether any addition is made of cream; the quantity of rennet used, and the mode of preparing it; the mode of pressure, and the treatment of cheese afterward.

DAIRIES.

For the best cheese dairy.....$50 | Second best.....$30 | Third best.....$20
B. P. Johnson, of Rome, Oneida Co., Chairman.

For the best butter dairy.....$25 | Second best.....$15 | Third best.....$10
Zadock Pratt, of Prattsville, Chairman.

The competitors for the above premiums must comply with the following regulations:—They must state the actual product of the cheese or butter dairy; the locality of such dairy in latitude; the composition of the soil, as near as may be, where the dairy farm is situated; the kind of grass used for pasture and for hay; the quantity, in pounds, of milk per cow on the average and in the aggregate; the quantity of cheese or butter to the hundred pounds of milk produced; the gross quantity of milk and cheese, or butter, produced; the quality of the cheese or butter; the method of making; the breed of cows composing the dairy; and all such other details procured as shall determine the most profitable mode of conducting the cheese or butter dairy business.

Premiums are next offered for maple sugar, silk and domestic manufactures, fruit and flowers, vegetables, and the following:

MISCELLANEOUS.

Best iron gate for farm purposes.....Silver medal.
Best ornamental cast-iron vase, on pedestal.....Diploma.
Best sample drain tile.....Diploma.
Best quarter of an acre of osier willow, and the best specimens manufactured from the product.....$8.
Best specimen wire hurdle fence, to be accompanied with an account of cost.....Silver medal.

DISCRETIONARY PREMIUMS

Will be awarded for—

1. Stoves and other manufactures of Iron.
2. Paintings and drawings.
3. Ornamental shell, needle, and wax work.
4. Implements and machinery.

Also, for all such other articles and products, not enumerated above, as shall be deemed worthy of encouragement.

The next premiums on the list are for the best Field-Crops—as wheat, Indian corn, barley, rye, oats, potatoes, sugar-beets, mangel-wurzel, ruta-baga, carrots, and peas; and here it is to be noted with pleasure that the trustees say, "it is understood the above premiums are to be awarded for crops raised in the usual cultivation of the farm—to include the entire crop raised in each case.

It is not intended to offer premiums for crops raised on small parcels of land, by unusual manuring and cultivation.

Premiums are also offered for best acre of corn for fodder; best acre of hops; best half-acre of flax, ditto of *tobacco*; best acre of cabbage, of broom-corn, of clover-seed, and timothy-seed. And by what follows, it may be inferred that suspicions have been entertained that premiums have been obtained by trickery and unfair management. Those, in fact, who have attended such exhibitions with an observant eye, must have perceived that there is a little too much management, or attempts at it, in the appointment of the judges on the ground, when those originally nominated fail to attend, and a little too much of personal importunity when they are on duty. It is to be regretted that in too many cases, men of supposed influence and popularity are appointed, for the sake of paying them the compliment, without ascertaining whether they will really serve or not; and when the day of exhibition arrives, the judges are nearly all to be appointed over again, and by chance, oftentimes, at the suggestion and by the indirect management of the most eager and active competitors; and the natural consequence is, that the result gives dissatisfaction and disgust—doing more harm than good.

These shows are too frequent, and too much is attempted to be done with inadequate means and in too short a time.

The cultivation and display of fruits and flowers, for example, should be encouraged by the institution of separate societies—horticultural societies for that special object, as at Boston. It should constitute an enterprise to itself, and is worthy of the separate and earnest devotion of men of taste and liberality. But we must return to the subject immediately in hand. Proceeding with the list of premiums, the trustees say:

Those who present claims to premiums for farm crops must state, in writing, the following particulars:—The condition of the soil at the commencement of cultivation for the crop; the previous crop and cultivation, and quantity of manure used upon it; the quantity and kind of manure the present season; the quantity and sort of seed used; the time and manner of sowing, cleaning and harvesting the crop; the amount of the crop, determined by actual weight or measurement; and the expense of cultivation. The land shall be measured by some surveyor, who shall swear to the correctness of his survey, and that it was made with a chain and compass; and the claimant of the premium, with two other persons who assisted in measuring, shall certify under oath as to the quantity produced from the piece of land mentioned in the certificate of the surveyor; and a sample of grain shall be presented at the annual meeting, with the oath of the applicant that the same is a fair sample of the whole crop.

The statements required from those who compete for the premiums on farms and field crops must be sent to J. B. NOTT, Recording Secretary, Albany, previous to the 1st of December, 1846; and the premiums will be awarded at the annual meeting of the Society on the third Wednesday of January.

N. B.—Plate will be substituted for money, on the application of the persons receiving the premium.

PREMIUMS FOR 1847—1848—1849.

Whereas, The Agricultural Society of the State of New-York has not an experimental farm; and whereas, to some extent, satisfactory experiments can be made by intelligent farmers on their own farms: therefore,

Resolved, That the undermentioned list of premiums be offered to induce public spirited individuals to lend their valuable aid in extending the boundaries of accurate rural knowledge.

Three premiums will be awarded of $30, $20, and $10, in January, 1848. For the best experiment upon a herd of not less than 8 cows, to determine the relative advantages of soiling, or depasturing milch cows. The experiment to be conducted as follows:

1. The experiment must commence on the first day of May, and be continued until the first day of November.
2. The cows to be divided in two lots of 4 each. One lot to be soiled, the other depastured. Before commencing the experiment, each lot must be weighed, and the record of the weight returned to the committee. It is necessary that the two lots shall be as near alike in weight and milking properties as possible.
3. The milk of each lot to be weighed separate daily.
4. The manure made from those soiled to be ascertained in cords.
5. An account to be kept of the expense of soiling; also, a detailed statement of the entire management, together with the measurement of the land occupied in soiling; and each to be returned to the committee.
6. A description and measurement of the land occupied for pasture also to be made.
7. Each lot to be weighed at the conclusion of the experiment.

For the best experiment, to be continued through three crops, to ascertain in bushels of grain, and weight of stalks or straw, the actual value of manure to a farmer. The experiments to be conducted as follows, viz:

1. Three contiguous acres of ground shall be selected.
2. One acre of which shall be manured with not more than ten cords of common barn-yard manure the first year, and plowed under. The second acre to be manured with fermented or composted manure, to be applied in any manner the experimenter chooses; but a full account of the mode is to be made, and the manner of application. Also, an accurate account of the cost of the material and its application.
3. The three acres are to be planted with corn the first year; the second to be sowed with barley or oats; the third crop to be winter grain. An accurate account of the yield of each crop to be kept.
4. A full account of the whole management, and all the details respecting the culture and the circumstances affecting the crop.
5. The several kinds of soil to be particularly described, and specimens transmitted to the State Society for analysis before commencing the experiment—and also at the conclusion of the experiment—discriminating carefully between each acre.

For the best.....$40 | Second best.....$30 | Third best.....$20

N. B.—The specimens of soil to be selected for analysis must be taken from the surface in different parts of the acre. Where the acre is green sward, the sample must be taken just at the termination of the roots

of the grass. Specimens should also be selected from the depth of seven or eight inches—at all events, immediately below the usual depth to which the plow runs. The specimens of soil must in no case be mixed, and should consist of about 1 lb. sewed in a cotton bag.

$30 will be paid, at the annual meeting of the Society in 1848, to the person who will make the most satisfactory agricultural experiment—accuracy and the importance of the experiment to be taken into consideration. A full detail of the experiment and its results must accompany the application.

For the best managed entire flock of sheep of not less than 100, to be awarded at the annual meeting in 1848:
Best.....$30 | Second best.....$20 | Third best.....$10.

The applicant for these premiums will be required to furnish the Society with the following information, viz:

1. The kind and quantity of food, and its value.
2. The quantity and quality of wool: this to be determined by its being submitted to the stapling of some respectable manufacturing establishment, whose certificate shall accompany the application for the premium.
3. The number of the increase.
4. Kind of sheep, and the number of ewes, wethers and bucks.
5. The value of sheep when fattened, and the value of lambs for the butcher.

CHASE'S CARD-SPINNER.

Among the articles exhibited at the late National Fair, we are much pleased to know none attracted more attention, nor met with more approbatory notice than this late invention of Mr. Chase, for covering cotton-yarn with a complete coating of wool, so as to make a cloth which cannot be distinguished from one entirely made of wool. The machine was inspected by many persons well acquainted with mechanics, and by manufacturers, all of whom, we understand, expressed great satisfaction at the manner in which it operated, and appeared convinced that it would prove very useful, and cause a great saving in the production of a valuable material for hosiery, and clothing for the working-man.

There were several specimens of cloths and linseys made from the yarn spun by this machine, and their appearance and texture were highly satisfactory to all who examined them. Some carpets that were also made from the same material, were greatly noticed and much remarked upon, as possessing a thickness and solidity much greater than any ingrain carpeting made entirely of wool, while the patterns and finish were beautiful.

But what makes this machine peculiarly interesting to the readers of this Journal of American Agriculture is, that it must produce such a saving in the family manufactures of our planters and agriculturists, from the capacity it possesses of working up both cotton and wool of inferior value, and of requiring so little useful labor to accomplish it.

We cannot better conclude this notice than by giving the following quotation from the "American Journal of Improvement and Mirror of the Patent Office," and the accompanying certificate from Hon. Dixon H. Lewis:

The *American Journal of Improvement in the Useful Arts, and Mirror of the Patent-Office*, a monthly paper, published at Washington, contains the following notices of said machine and exhibition, including a letter to the editor of that journal from Hon. Dixon H. Lewis, Senator of the United States from Alabama, whose opinion on all subjects is entitled to the highest respect:

"Of all the improvements and inventions of modern times, there is, perhaps, none of more importance to the southern planter and northern manufacturer than Chase's Patent Card-Spinner, of which machine Mr. George Law, of Baltimore, is the proprietor. It is intended for the fabrication of an entirely new article, by enveloping a cotton thread in a woolen fibre, making a thread of superior strength to one of the same diameter of all wool, and will entwine from one to four threads of cotton, flax, or other yarn (twisting them into one thread,) covered with wool. The goods manufactured of this material possess all the warmth of woolen cloth, with greater durability, and, in consequence of the principal material used (cotton) being so much cheaper than wool, they can be made at a far less cost than an article composed entirely of wool.

"The machine is very simple in its construction, and, being made principally of cast-iron, will only require a renewal of the cards occasionally.

"At one operation, it cards the wool and envelops the cotton-yarn in a woolen integument, strongly entwined around it, in larger or smaller quantities, according to the species of goods intended to be made, at the wish of the operator, preparing the yarn for the manufacture of a substitute for all woolen goods, from a light flannel to a heavy blanket."

WASHINGTON, February 25th, 1846.

"*Sir:* I have witnessed the operation of Chase's Patent Card-Spinner, for enveloping cotton, hemp, or flax, with wool, and am convinced that the machine will give a thread much stronger than one made with wool in the ordinary way, and equally as warm, without showing anything else than the wool. The fabrics I have seen are, I would suppose, stronger than all wool, and as strong as cotton, possessing the warmth of one with the durability of the other.

"I should suppose such a machine could be introduced to great advantage in private families in the South, and can be operated easily by two very ordinary hands.

"*To the Editor of the American Journal, &c.*" DIXON H. LEWIS.

We add our recommendation to these testimonials, fully believing our large planters and farmers will find it much to their interest to possess themselves, at a small expense, of a machine which will soon much more than pay for itself by the saving in cost its various products for clothing, carpeting, &c., which have met with so much approbation from those who are well skilled in the value of such articles.

Mr. GEORGE LAW, of Holling-street, Baltimore, is the proprietor, from whom every particular can be ascertained.

VARIOUS USES TO WHICH CORN AND CORN MEAL ARE APPLIED.

[Communicated for the Farmers' Library.]

FINE food, in all its stages, and in any way of preparation, for horses, cattle, hogs, sheep, poultry, &c. &c.

Its stalks make fine sugar.

The grain makes excellent whisky.

It is a delightful vegetable in its green state, and when used as such is called "roasted ears," or it may be boiled, then trimmed from the cob and mixed with butter, salt, and pepper—and oh, how delicious!

It makes a nice pudding.

When hard, it it is pounded so as to crack the grains and get off the husks, and then boiled, makes *hominy*.

If half ground in a mill, it is then delightful as *small-hominy*.

Great-hominy may be eaten warm, with butter, or cold with milk or fat bacon; or, it can be fried with bacon or lard, and makes a nice dish if properly fried.

Small-hominy, after being boiled, can be made into small cakes and *fried*, and is very nice.

Parched corn is good to quiet hunger, and has served often our starving soldiers, when they gained the liberties of this free land we are now so proud of.—When ground into meal, it is used in every variety of mode, and after every fashion: for instance—mush, crush, *dodger*, fried-mush, fried-bread, ash-cake, fat-cake, hoe-cake, baker-cake, journey-cake, thin journey-cake, crackling journey-cake, corn-dumpling, griddle-cake, pone, light-pone, mush-pone, short-cake, muffin, egg-pone—improves buckwheat cakes—is mixed with rye and wheat flour, and improves both.

Of the above modes I can furnish recipes if deemed necessary.

[Pray, good friend, let us have them all—it can do no harm, "any how."

Ed. Farm. Lib.]

INDUSTRIAL RESOURCES OF THE SOUTH AND SOUTH-WEST.

CHARACTER, HABITS, AND MANAGEMENT OF SOUTHERN PLANTERS....NOTES ON THE LONG-LEAF PINE....TAR AND TURPENTINE INDUSTRY OF NORTH CAROLINA DESCRIBED ....SALT NOT ADAPTED AS A MANURE TO CANE-FIELDS....LETTER FROM GENERAL EDMUND P. GAINES.

In other places, and under various guises, have been already published some of the scattering fruits of personal observation among, and of correspondence established with intelligent land-proprietors and others, in the South and South-West, while on a jaunt in early Spring as far South as Charleston, Savannah, Milledgeville, Macon, Columbus, Montgomery, Mobile, and so on to New-Orleans, and along "the coast" to Natchez; returning thence by the way of Augusta and Columbia, to "the place of starting."

It is reported of Talleyrand, that on being chided by a lady for passing without recognizing her, he at once replied—"Ah! madam, if I had stopped to look at you, I never could have passed!" Now we recommend to all men of taste and sensibility, who have any inkling for good company and good cheer, and who have any claim to the hospitalities to which we had so little, if they would make progress on their journey, not to halt at the charming places we have mentioned—charming emphatically at that season of the year, for a Northern man, when in his own region "grim-visaged Winter" is wont to "linger in the lap of Spring"—while there, impatient of delay, he decks himself in flowers and sallies forth even in February to dance upon the green and bask in the genial sunshine.

Two months have passed this day (June 3d), since, at the sumptuous table of a friend in Mobile, supplied and served in the good old Virginia style, we met that great luxury of the garden, strawberries, which have just now made their appearance in like abundance in New-York. The splendid Cherokee rose-vine was already growing over the tops of the locust-trees.

But our purpose is to note what we could see or hear of, touching the *great staples* of Southern Agriculture, and here we may as well at once remark, that on few subjects does there exist so much delusion in the North, as in reference to the habits and character and management of the Southern Planter. We do not propose at this time to go into any extended remarks on these points, because as yet we are not fully prepared with our facts; but let him who would form a judgment go and see for himself, and converse with them as we did in the social and public circle, and if we are not egregiously deceived, he must admit that they are nowhere to be excelled for that enlarged knowledge of the true principles of good husbandry, which has been gained not alone from books, but yet more from eager and sagacious inquiry and conversational intercourse, and from that best of all books, experience, in the resolute and skillful and industrious, yes, eminently industrious, management of their own estates, whatever may be thought or said to the contrary.

Let the amateur or the connoisseur who would enjoy that most beautiful of all prospects, large estates well and neatly managed, go and take a look at the rice plantations in Georgia, and the cotton plantations of South Carolina and farther south—such for instance, as Col. Singleton's estates, wide in extent, and yet so much wider in renown for beauty and excellence of appearance and manage-

ment under his own direction—or at the estates of Col. Hampton near Columbia, where one may, with one *coup d'œil*, look over some 1500 acres in a single field, and that the very first in which cotton was planted as a field crop; so level and clean that a large black snake, or "*horse-runner*," might be seen crawling over any part of it; and yet so carefully and judiciously *drained* as to bear upon its surface not a quart of stagnant water. Ditches without a clod to obstruct the flow of water or a bush to disfigure their borders, and throughout the whole estate of several thousand acres, roads as well constructed and in as perfect order as if they had been just handed over as finished work from the hands of a corps of Uncle Sam's engineers. It is here worthy of being noted, for example's sake, that on these estates the clearing out and repairs of roads and ditches constitute a part of what is called the "task" for the slaves, which is really a light one as compared with the customary hours of field labor in Europe. In this way roads and ditches and fences are all kept in order with as much punctuality as the adjacent cultivated fields. It is in view of such management and perfection of work that every one must be struck with the superior results of labor fully fed and clothed, and skillfully directed; showing by comparison, the efficiency of well trained regulars over volunteers and raw militia, as would probably be illustrated by any calculation which should exhibit a fair account of profit and loss. We are relating facts, not discussing principles. But we must "try back" for the present to the old North State for a view of the Tar and Turpentine business, as it was that which first and most forcibly attracted attention in a series of objects, with which, by personal observation, we had been theretofore almost altogether unacquainted. The following description of this branch of industry is the redemption of a promise exacted by us on the spot, in the woods, the precise theatre of the experience it so kindly and fully details, and is the article refered to in our last as being then not in hand.

We are in daily hope and eager expectation of a paper on *rice culture* from one of the best and most accomplished Planters near Savannah.

NOTES ON THE LONG-LEAFED PINE.

(*Pinus Palustris. L.*)

This species was originally described under the above name by Linnæus, (Sp. Vol. IV. p. 449.), and was thus characterized—

"Leaves in threes, very long; cones nearly cylindrical, muricate, stipules pinnatifid, ramentaceous, permanent."

It was subsequently described under the same name by Walter, Michaux, the elder, by Pursh and Nutall. In the North American Sylva, the Forest Trees of North America, by F. Andrew Michaux—Vol. III. p. 133, pl. 6—this species is again described and figured under the name of *Pinus Australis*. The whole description of the specific character, as well as the valuable properties of the Long-Leafed Pine, is deserving of a careful perusal.

In Ellicott's Botany, Vol. II. p. 637, this species is again described with great accuracy. He restored the original name of Linnæus, viz., *Pinus Palustris*, although it is inapplicable and somewhat unfortunate, as it is not found on low marshy lands, but is almost invariably confined to dry, sandy soils, where there is a subsoil of clay. It abounds on all the high, and consequently dry Pine barren lands of South Carolina, within 110 or 120 miles of the Ocean. In the moist or fertile lands, the subsoil Pine (*Pinus Tæda*) is found most abundant and at some distance from the sea-coast; the Pitch, or Virginia Pine (*Pinus Regida*) takes its place.

This species does not differ in any particular from that of North Carolina, which has proved a source of so much profit to the inhabitants. It possesses the same resinous properties, and yields them in equal abundance. Tar and Resin were formerly articles of exportation in South Carolina, although to a limited extent. Very recently several enterprising individuals have engaged in this business in South Carolina. We were afforded opportunities of inspecting the ar-

ticle as brought to the Charleston market. It appeared to us as fully equal to that procured in North Carolina, and we have no doubt will add considerably to the other resources of the State.

THE TAR AND TURPENTINE BUSINESS OF NORTH CAROLINA.

BY JOHN MACLEOD, OF JOHNSTON.

THE Long-Leaf or Straw Pine of the Southern States of the North American confederacy, affords a most interesting subject of contemplation to him who delighteth in reflecting on Nature's wisdom and laws—and to him, also, who looketh forward to a period of time when the Navies and Commerce of the different nations of the Earth—the arts, wants, and comforts of Mankind may be deprived of the many advantages and blessings derived from this beautiful, commanding and attractive evergreen of the South. It has been beautifully said, and may be plainly observed, that the delight and harmony of Nature is ever arising from the contrariety of her works—a stronger and more striking illustration of this is not easily to be found, than may be seen in the contrast of the lofty towering Pine of one hundred and fifty feet, with a rounded, beautiful, and tapering body of eighty or one hundred feet, clear of knot or limb, and with a diameter at the ground of five feet, then gracefully narrowing to two at the other end of the body; and yet, this peerless order of Nature's architecture is reared upon a sterile, arid, and silicious soil, that in its original condition will scarcely produce anything else. On the coast of the Atlantic, bounding the Southern States, this beautiful and valuable forest is, I believe, alone to be found on this Continent; and there it is confined to that level region lying and extending from the falls of the rivers to the sea-coast; or from the coast to that marked line in formation, which divides the more primitive from the secondary or alluvian, and is usually from eighty to one hundred miles in width. That this *coast-belt* remained long a barren waste, after the recession of the sea, is more than probable.

The age of the oldest Pine of the present generation (if I may so express them), is well ascertained to be between four and five hundred years. That they are of the originals is not to be supposed; but that their continuance will be greatly confined to the present growth, is much more than probable. In many other respects there is a similitude between the animal and vegetable kingdoms, as well as in their approximation; and the writer is much of the opinion that it may be plainly observed between the Long-Leaf Pine and the race of animals once common to this region, but which are now extinct and gone forever. And it would not be a great effort of fancy to perceive the likeness between them and the Aborigines who once proudly lorded over those plains. Culture and civilization are unsuited to the nature of this splendid cloud-capped native; for, unlike all other trees, it thrives best when let alone, and it repels and seems to spurn the nursling care of man, and even withers and speedily dies rather than endure it—and like the allodial native Indian who first companioned with this queen of the forest, they are making preparations to leave the habitations and settlements of the Anglo Saxons. The foundation of this speculation may be observed in all our Pine forests—in the very few, or none, of under-growth now presenting themselves, to take the place of their seniors as time may remove them. There are but very few of these younger set, and Pines are rarely to be found, (compared with the extent of the region), that are now less than twenty to forty years old; and it is distinctly to be seen, that where they are destroyed by blasts, hurricanes, or turpentine-making in the settlements, a growth of oak, hickory, &c. immediately arises in their stead, without a solitary instance of the Long-Leaf. This is more and more the case as you leave the coast toward the Western extremity of the piney region. Whether this arises from the economy displayed in all the productions of the earth, which teaches a change and variety of crops, may be a fine subject for the agricultural philosopher.

It is to the limits of North Carolina that these observations are mostly confined. The annual productive value of the Pine lands here is great and profitable, even at this day; but, in the view of the writer, as nothing compared to the enhancement that a short half-century will add to them.

Turpentine, Lumber and Tar are those products: and as the culture of the former and latter are least known, and most characteristic of the "good Old North,"

(God bless her!)—one of her most distinguished sons* has inspiringly characterized her to the world in song, a verse of which runs—

"And her Daughters—the Queen† of the Forest resembling—
So graceful, so constant, to gentlest breath trembling,
And true light-wood at heart; let the match be applied them,
How they kindle and flame—Oh! none know but who 've tried them."

But, as I was saying or about to say that a description of the manner of making Turpentine and Tar was as well characteristic of the State, and least known out of her borders—and which, you insist, will be interesting to a large portion of the readers of your valuable Library, I will attempt briefly to give it:

An able-bodied man will require for his *field* about one hundred acres of Pine forest as his crop. After the middle of November, boxing the trees commences. Thus with a long, narrow ax, a box or chop is made in the tree, from three to six inches from the ground, or just above the swell of the roots. The width of the box is governed by the size of the tree, but usually from eight to sixteen inches. It is not cut far inward, but aims downward and to the line separating the sap and heart of the tree. The rim of the box is kept level, and it is designed to hold from one to two quarts—in small trees they do not hold so much. This boxing continues until the middle or end of March, or when the sap begins to rise freely, and will embrace about four months, as the only suitable boxing season of the year; and he is a good hand who can in this period cut his own crop for the coming year, though it may be done. The average number for a hand to cut in a day is 80 or 90—a few less in the shorter, and a few more in the longer days of that season. Here I may remark that we estimate the cutting of boxes at about one dollar the acre—though it may not cost quite so much, but nearly so. The most usual number of boxes for a hand as a crop is a thousand—though they can do well with either more or less. An acre averages about one hundred boxes—the larger trees affording room for three boxes, the middle size for only two; and the smaller (being about 9 or 10 inches in diameter), only one box.

When the hundred acres are thus boxed, the hand has his crop or field in preparation for the following ten or sixteen years. The boxes being cut, the next work is cornering, which is often performed by two strokes of the same ax at each corner of the box, taking out a light chip: a perpendicular line of about four to six inches is thus started upward from each corner. This operation is executed with great dispatch, as a hand will corner from six to eight hundred in a day.—With this last work the boxes will usually fill with turpentine, issuing as well from cornering, as from the face made in cutting the box. The next thing to be done is to lay off the ground in what is called "patterns"—this is done by staking it off in straight parallel lines, of forty yards in width, with visible and pretty permanent stakes; this is necessary to enable the hand to follow his "through" or row, regularly, and miss no tree in all his future attention to them. All this being done, and the boxes being full, or nearly so—but it is proper to remark that the boxes are all never full alike, some trees issuing much more and faster than others—the full ones indicate the necessity of "dipping," which is done with an iron trowel-like instrument called a "dipper," having a socket to receive a wooden handle of three or four feet. The blade is ten or twelve inches long, about six inches wide in the middle, tapering to an oval point, and flat on both sides, with the substance of about one-fourth of an inch in thickness in the middle, declining to a dull edge at the point and sides. This instrument in hand, and two rude pine buckets with bale or handle to them, and barrels, with one head out, fixed at stated distances in the "pattern" or "through," the man begins his dipping by thrusting his dipper in at one corner of the box, ranging it down to the bottom, and pressing it upward toward the opposite corner, all with a quick motion. When nearly the whole contents of the box are collected on the flat surface of the dipper—which is immediately carried to the bucket, that being set quite up to the tree—the dipper is drawn over the near edge of the bucket to cleanse it from the adhering turpentine; and to accomplish this the more effectually, a strip of hoop-iron is fixed in the edge of the bucket to draw the dipper on. The first box being thus emptied, with quick step the next is reached, and so continued until the bucket is nearly full—it holding about eight gallons when full; the man carries it to the barrel and turns it in and there leaves it to drain, while he is filling the other bucket, which is soon to take its place. Thus, a hand will

* Judge Gaston. † Pine.

fill from four to seven barrels a day; some active, quick hands have filled as many as ten barrels in a day. This is the whole process of dipping. The first dipping of newly cut boxes is the purely "virgin dip," though the whole product of the first year of the Pine is commonly called "virgin dip."

It is not a little remarkable that the first dipping is very different, in being thin, oily, and transparent, or more so, than any that the tree will ever again afford; and perhaps not less strange that the product of each succeeding year, as long as the tree is cultivated, is different from their antecedents. Every succeeding year the turpentine becomes thicker and more deeply colored, from a light cream toward an orange; and yet not differing perceptibly in its yield of spirits. It is from the "virgin dip" only, that the white, transparent resin, so much used in the arts, and especially in making the fine white soaps, can be made. When the dipping is thus over, the next work is to "chip" or scarify the tree, immediately over the box, and extending across the face between perpendicular lines, arising from the corners or outer edges of the box. This is done by an instrument usually called a "hacker," sometimes "shave." Its form is somewhat like a "round shave," narrowing at the cutting place to the diameter of an inch, with a shank, to be fixed securely into a strong heavy handle of about two feet length, while the faces of the trees are low, but the handle is made longer an years advance the faces higher. With the hacker the man stands nearly in frost of the box, and makes a stroke from the perpendicular line to the corner, toward the center or line from the middle of the box, upward, cutting a furrow-like gash through bark and sap-wood, and about a fourth of an inch deep into the wood.—This is mostly done with one stroke, when the man immediately changes hands or position, and makes a like stroke on the opposite side, toward the centre. In this way he passes through his "patterns" until he gets over his whole crop, which he may readily do in six to eight days; and, as soon as over he returns to where he began, and goes over them again and again until his boxes are full. The filling is generally done with four to six "chippings," or four to six weeks, when dipping comes round again. In chipping, each succeeding cut is made immediately in the upper edge of the last, and should be made in breadth as narrow as the hacker can be made to cut it—as it is well ascertained that a small scar or narrow cut, if deep enough, does as well, or better, than a larger and broader one, and the economy of the narrow cuts is in saving the tree to many years longer culture, while the wide cut would carry the face out of reach prematurely.

This succession of "chipping" and "dipping" continues from April to October, or until frost, when the turpentine is done running, from a want of sufficient heat. New boxes are commonly dipped five or six times in that period—older boxes only three and four times. The quantity made by a hand is quite various, but may be rated as averaging one hundred and fifty barrels. Many make two hundred and some even as high as three hundred barrels in the year. When the last dipping is finished, which is generally in the month of November, collecting the "scrape" is the next duty. In all years after the first, the trickling of the turpentine down the face of the box, from the chipping of the hacker, and which face is lengthened upward about one foot every year, there adheres to the face or smooth surface over the box a considerable portion of the issuing turpentine—it is often nearly an inch thick on a considerable portion of the face, and is well worth being collected, which is done by scraping it off with several different instruments, as may be most fancied by the operator—often with a small spade, that detaches it from the wood, to fall into a coarse two-legged stool-box, open at one end, which open end is set against the tree below the face, at catch the "scrape" as it falls from the face of the tree and the instrument.—When the box is thus filled, it is carried to an open-headed barrel near to hand, and emptied, and so continued until the barrel is full. The "scrape" is hacked into the barrel either by trampling or pounding, until it is made to hold all it can.

This article has usually been sold by the barrel, at about half the price of the "dip" or liquid, but of late, the more correct rule of selling by weight is becoming generally established. Its yield of spirits is nearly as half of the "dip" per barrel; and for making the common or inferior resin, it is greatly preferred by the distillers. The "scrape" is thus collected with much dispatch, and is finished generally in the month of December or January. After the boxes are five

or six years old, they yield about as many barrels of "scrape" as of "dip;" and as they get still older the "scrape" increases. But it is more than probable that at half the price of "dip," the "scrape" is the most profitable to the maker.

This description embraces the whole operation of the culture or making of Turpentine, save the preparation of the barrels. The timber of which they are made is usually got out by the same hands who make the turpentine, and commonly taken from the same land as the wood for the boxes. The staves are cut thirty-two inches in length, and three-fourths of an inch in thickness—the heads about 17 inches in diameter, so that the barrel may contain thirty-two gallons.

From the time the getting off the "scrape" is finished until the season of "chipping" comes round, which is generally from the first to the tenth April, the hand is engaged in getting the barrel-timber, which ought to be well seasoned when made up for "dip" barrels; and it will save time and a loss of turpentine, to separate the heart and sap staves as they are being cut, so that the former may be made into "dip" and the latter into "scrape" barrels—the heart staves retaining and holding the liquid while it will soak *through the sap staves*. The cost of these barrels is estimated always at from twenty to thirty cents each. Thus it may be seen that, like the engagements of a farm-hand in always finding something needful to be done in every day of the year, and something that should not be neglected, so with the turpentine-hand the whole year has its various demands upon him in their proper season; so that there is no time to spare from his turpentine crop.

The profits of turpentine labor, like that bestowed on all other products, depend on price—and price is regulated by supply and demand. Compared to other labor, this has, for the last ten years, been deemed the most profitable of all. It is indeed difficult to put a proper value on Turpentine land, properly and conveniently located. Applied to the production of Turpentine, as here described, the annual value of the acre is from four to six dollars gross in its product: at three dollars per barrel, which is an interest on sixty to a hundred dollars, and when the trees are exhausted of their Turpentine, the acre is very nearly of equal value in its after products of Tar—the culture of turpentine being preparatory to the largest yield of tar from a given quantity of acres. The old faces over the turpentine box, being completely saturated with resinous matter, are the richest light-wood, and the faces are chopped out in thick scores from the standing tree, in readiness for Tar-making. Then, even after this spoliation of their *sheba*, the lands are the best of any for farming. I mean that they are more susceptible of improvement by manuring and other proper farming management and economy, than lands of more virgin fertility when exhausted. The pine lands are usually of table level, and mostly dry, or quite susceptible of drainage; but which is not often required; their soil and surface are based upon a clay substratum, and they yield to the influence of art, culture, and manure, most kindly and invitingly, while they undergo an entire change in their surface appearance. By being well manured their whitened sandy surface becomes dark and loamy, and is productive of many valuable crops that clay and stiff lands do not grow well; such as the various kind of peas and sweet potatoes, than which the Earth does not yield more profitable and comfortable crops for man and beast. A most interesting consideration arises in contemplating the productive qualities of the Long-Leaf Pine, bordering the Atlantic and the Gulf coast of the Southern States. Whether they are to take the place of those under view in this article, in furnishing the world with turpentine after these are done and gone, which must be their destiny in less than a century, is a question of no small weight in this connection. Time and trial can alone solve it. The opinion of the writer is, that the Southern Pine will yield it—profusely yield it, but for a short time only. That the warmth of the climate will induce too profuse and too late a running; creating a disease from exhaustion, that will kill the tree in the second and third years. Even here, where the climate seems to be of the right temperature for this business, the trees are often, very often, diseased from boxing, and die in acres. But this is only speculation as to the Pines of the South, and, as just remarked, can only be corrected or verified by time and experience.

Tar making is much more simple and expeditious than Turpentine; though it is very questionable if making Tar is not the most profitable at the usual prices of both articles. A hand put to making Tar alone, as Turpentine hands are,

will make from four to five hundred barrels in the year. The primitive method of making Tar is yet kept up, with little or no improvement, and it is more than likely there never will be any alteration in it, save in obtaining the *light-wood* from which it is made—the cast-away Turpentine faces of trees being quite new, and artificial in making the material for Tar. The common and old-fashioned way of making it, is first to collect in a central spot, all the *dry bones* or skeletons, as it were, of the decayed Long-Leaf-Pine, that lie and have lain bleaching on the surrounding plain for centuries perhaps; these are the heart portion of the body and limbs of fallen trees, after time and fire have destroyed the sap wood that enveloped them. With these dry bones the surface is very much covered—not entirely covered, but so thick as to fill the body of a horse-cart, in many places, in a square of ten yards, and very often in a square of ten feet. This is what is known in the "good Old North" as "*light-wood*;" being by time and nature full of resinous matter, and so inflammable as often to catch fire by holding it in the flash of a gun, when it is splintered up. With us, this is the poor man's brilliant lamp, by which the gem of mind of many a son has been opened to science—lighted to honor, to fame, and distinction. It is also the same with the rich man, as it ministers to his comforts and social pleasures, blazing on the family hearth and displaying every smile and lineament of the "face divine." This light-wood is carted to a place selected for the kiln, where it is split, and chopped into pieces (indifferent as to size, so that it is split,) of less than a foot to three feet in length; a circle being marked on the adjacent ground of from ten to thirty feet in diameter; the size depending entirely upon the number of barrels you design making from it: a diameter of thirty feet, and ten feet in hight being the measure of a kiln of three hundred barrels. The circle being struck, and its inner surface being smoothed or shaved over with hoes—in doing which, it is scooped out with a gentle inclination from the circle to the center, so that the whole surface may present a shallow, basin-like form—the surface of this basin-form is then pestled, or pounded, until it is smooth and firm. There is then a covered gutter or trough imbedded under ground, one end a foot or two beyond the center, inside, and the other end reaching eight or ten feet beyond the circle, ending in a hole of something like four by eight feet and four feet deep—this is the hole that receives the Tar when running from the kiln through this gutter—the size of the trough or gutter must be regulated by the size of the kiln; usually it is from three to six inches wide, and three to five deep. It is set with considerable inclination from the center of the kiln to the tar-hole; such an inclination as may be judged the Tar requires to be moved briskly when a little warm. The inner end of this trough (reaching beyond the center of the basin bottom,) is left open, and uncovered from one to three feet to receive and carry off the Tar as it settles. Over and around the basin, in this open end of the trough, round, unsplit light-wood is raised in pen form for three or four feet, with considerable care and taste, so that it may protect the end of the trough from immersion of Tar. The light-wood is then laid all around, with the same inclination toward the center that the bed had. Thus it is continued to be laid in lengths from circle to center, keeping the outer ends on the circle as even as possible and with the same or more inclination inward, as it progresses, until it is made eight or ten feet high. The "*setting the light wood*" being thus finished, the next thing is to "bough" it, which consists in sticking its whole outer perpendicular circle full of green pine boughs, as thick as they can be well stuck. It is easily and quickly done—every bough having a small round limb on which the straw grows in thick broom form, and is what we call pine boughs. This broken-off limb is stuck in between the ends of the split light-wood, as before said, all around; when "boughed," it presents a mound of evergreen, pleasant to the eye to look upon. It is then ready for embankment, which is immediately to follow, if it is intended to "burn it off" directly; but unless it is to be thus burnt for market as soon as finished, they often stand one, two, or three years, before embankment, without any injury—and this is often the case, to await a season of better prices and to be ready to take the benefit of such. But the embankment must immediately follow the "boughing." It is done by throwing up the surrounding earth all around the circle, and the earth is kept up by a pen of poles or rails fixed around the circle so as to retain the dirt perpendicularly; around and between this pen and the circle of the kiln the earth is trampled. The use of the boughs is now to be seen, in preventing this earth from

penetrating the kiln through the crevices at the outer ends of the light-wood, or in any way interfering with its covered combustion. The embankment is thus carried up nearly or quite as high as the light wood, and is in thickness from one to two feet; intended, effectually to exclude the air from entering the sides of the kiln as it is burning.

The upper surface is then to be prepared, with a similar view; and to reach it conveniently, a rude gangway is first made with long poles laid side by side from the ground, the upper ends resting on the top of the kiln: a slope is given to them to make it easy of ascent, and is covered over with turf, as it is to be in constant use while the kiln is on fire. The upper surface of the kiln is to be turfed completely over with spits cut with the spade or hoe from the adjoining ground, where small roots and fibres are most likely to hold the earth together, and which are to be carefully carried by hand to the top of the kiln, and there placed in the best order and position to smother flame; therefore the fixing of the gangway or walk to the top is of importance. The surface of the light-wood being first completely covered with green boughs or with the dead pine straw on the earth around it, it is thus turfed, save a small place of three inches all around the rim of it, where the fire is to be applied, and a spot in the center, about two feet over, that is intended to draw the heat and fire from the circle toward the center. The turfing being finished, the kiln is ready for firing, which is done on the top, and at the naked place left around the rim in turfing. When the fire works well, all contiguous to this central place is well watched and gradually lessened until the whole surface is charred when it is as well turfed over as the rest, so that all flame may be entirely suppressed. Thus being fired, the end of the trough in the tar-hole securely plugged air-tight, it must be constantly watched, to keep under any outbreak of flame; which, if permitted long, would be dangerous and difficult of suppression. In the course of one or two days it will begin to "run" from the trough (when the plug must be removed) into the tar-hole, which is usually spacious enough to contain ten or fifteen barrels, and from which it is baled out into prepared barrels made pretty much after the fashion of turpentine barrels, but with large bung-holes, into which a bucket funnel is placed to fill the barrel. Then it is ready for market. It takes several days for a kiln to "run off." According to size, from four to ten days, and during all that time, it has to be attended or watched day and night by a vigilant, careful man. Indeed it is a kind of vocation or trade to be a "tar-burner," as it is in setting and burning brick. Tar is made in the same manner, from light-wood boxed-off from the cast-away turpentine trees as they stand, and it is no doubt true that a man can make more tar, in a given time, from this light-wood than he can from the thickest set light-wood on the surface. The coal from a tar-kiln after it is run off is very valuable, and is looked upon as the very best for smith-works; they afford a large number of bushels—a kiln of a hundred and fifty barrels will give five to eight hundred bushels of the best kind of charcoal.

I have thus, sir, at your pressing solicitation, given a narration of Turpentine and Tar-making, not in polished or searched style and language, but, as you urged, in a fireside-like conversation, and it is done only at spare intervals from various mental and bodily engagements. I am not myself so well pleased with it as I think I might be, if done with a mind more abstracted from other things. If it has any merits, they are based upon experience; having been myself pretty extensively and constantly engaged in the making and distilling of Turpentine for the last ten years. Unpolished as the relation may be, it may nevertheless be of interest to those general readers who are in constant pursuit of knowledge, and who have but an imperfect idea of this branch of business, and it may be of deep and abiding interest to many who live and were born here in the Southern Pine forest. I myself have seen the time that I would cheerfully have given the price of a volume of your valuable Library for information like this as a guide; and yet I was born and raised here in the "pine woods." As before remarked, the Long-Leaf Pine forest presents a most interesting subject to the contemplation of the patriot and philosopher, as well as a cheering scene to the eyes of the beholder, and no lands afford a stronger evidence of the versatility of estimates than they do; for it is within the remembrance of the writer, who is not far in the decline of life, when these lands were looked upon as scarcely worth owning, or paying taxes on them; while now, they are the most valuable of any, as well for farming as for their natural growth and production. The purification of a noxious at-

mosphere by the odor of the Long-Leaf Pine, is an engaging subject for science. I will only here say that there is such an effect beyond doubt, as is proven daily. Hands engaged in making Turpentine are always more healthy than those employed at any other business, and so are they who live in the piney region, if unconnected with, or not adjacent to stagnant waters. If time shall prove the Southern Long-Leaf Pine of value, approaching those of Carolina in their yield and products, what a source of wealth they must be to the Nation as a portion of the public lands; and how improvident and short-sighted they must be who insist upon giving away, or graduating the price of them, based upon present estimates of value. If the lands not sold are let alone, only to be protected by the Government from the hands of the spoiler, until time shall bring about their true value and they are permitted to fulfil their intended destiny, in educating the rising and succeeding generations, and making and improving the highways of trade and pleasure throughout the States, what portion of the habitable globe can compare with these United States of America in all the means and ends necessary to the happiness of man?

COMMON SALT.

REASONS WHY IT SHOULD NOT BE USED AS A MANURE FOR THE CANE FIELD.

JOHN S. SKINNER, Esq., Editor of Farmers' Library: PARISH OF ASCENSION, La., April 5th, 1846.

Dear Sir—The last time I had the pleasure of seeing you, some one present spoke of the favorable mention made by Judge Rost, in his address published in the Farmers' Library, of common salt as a fertilizer. I observed that notwithstanding the favorable result of Judge Rost's experiments; and although a sugar planter of some note in the State had, for a number of years past, made a liberal application of salt to his land; yet there was a chemical fact which rendered it highly objectionable as a manure for the cane field. I alluded to the combination of common salt (chloride of sodium,) with sugar, in the proportion of one part of salt to six parts of sugar, by which an uncrystalizable compound is formed. That I spoke *authoritatively* will appear from what follows.

Boussingault in his Rural Economy (translated by George Law) says: "Mr. Peligot has pointed out several causes which concur to deteriorate sugar; among the number, a viscous fermentation which renders the sap thick and stringy, like mucilage, by which the boiling becomes difficult and the crystalization of the sugar which has escaped change is rendered imperfect. 2. An acidity which takes place when the juice is not run at once into the coppers and boiled—an acidity which requires the addition of lime to destroy or to prevent. The alkaline earth, as I have had occasion to say, is by no means indispensable; its utility under ordinary circumstances is probably confined to assisting the defecation by forming an insoluble precipitate with some of the organic substances which are always to be met with in small quantities in the cane juice; perhaps also to making an earthy soap with the fatty matters which adhere to the cane and are expressed in the crushing. When lime is added to correct acidity, it forms an acetate or a lactate—salts which are peculiarly soluble, uncrystalizable and which necessarily retain a quantity of syrup in the syrupy state. 3. The presence of certain mineral salts in the cane. Common salt, for instance, in combining with sugar, forms a deliquescent compound in which one part of salt is united with six parts of sugar; such a compound as this of course renders a large quantity of syrup indisposed to crystalize. It is, therefore, impossible to be too cautious, according to Mr. Peligot, in the choice of manure for a cane field; that which contains any common salt must needs be injurious in one way, however advantageous it may be in another. The entire absence of this salt in the soil of plantations which are very remote from the sea shore, is perhaps one of the causes which increase the quantity of sugar obtained from the crop, and makes it more easily manufactured in those districts."

And what follows is extracted from "A Report of Chemical Analyses of Sugars and Molasses," by Professors Bache and McCulloh, prepared in obedience to a resolution of Congress. "Now it follows from this fact, and the direct experiments of Mr. Hervey, that crystalizable cane sugar is the only saccharine matter in the cane, and that all the molasses sugar, grape sugar, &c., contained in the molasses, are results of decomposition of cane sugar by imperfect manage-

ment. Certainly, then, too much importance cannot be attached by the planter to a knowledge of the causes which produce this decomposition, and the remedies. When beets grow in land too highly manured, or containing soluble salts, their juice is very difficult to crystalize, and yields a large quantity of molasses. So canes grown upon lands where timber has been recently burned, take up the soluble salts by their roots, which must act very injuriously. Common salt will form a compound with six times its weight of sugar, which refuses to crystalize, and remains in the mother liquor: so likewise alkaline carbonates, and other salts, operate to increase the quantity of molasses, and injure the quality of the sugar."

The authorities precited are sufficient to establish the fact of the combination of salt with sugar, and that the compound resulting therefrom is uncrystalizable. It is to be inferred, also, that all the soluble salts are obstructive of saccharine crystalization, and are molasses-producing agents. Now the problem to be solved in sugar-making, is to bring the sugar-containing liquid to the state of a pure solution of sugar in water—to eliminate all extraneous matters from the mother liquor. The application therefore of common salt to the soil, by which a substance antagonistic to crystalization is introduced into the mother liquor, is *working backward*. It is, indeed, quite apparent that the sugar planter should be cautious in using any mineral agent as a manure for the cane-field, since, however, promotive of vegetation such agent may be, it is, at the same time, obstructive of crystalization. I am, with great respect, &c. H. B. T.

GROWTH OF THE WEST .... EFFECT OF STEAM-POWER.

[What more striking picture could we present than that which is offered in the enclosed, from a gallant old soldier, whose heart, while his head grows gray, beats if possible more and more ardently in the cause of his country; and within whose personal observation such progress has been made in the growth of the great region to which he refers?]

NEW-ORLEANS, April 4th, 1846.

My Dear Sir: Notwithstanding your favor of the 2d inst. was handed to me at a time when much occupied with professional duties, indicated by the late special message of the President, suggesting the propriety of immediate *action*—"*in Peace to prepare for War*"—I could not deny myself the pleasure of a compliance with your request that I should give you some of my reminiscences and reflections regarding the vast progress which has been made in the agricultural developments of the country connected with the Mississippi, since the acquisition of this region under the administration of Mr. Jefferson.

When a young subaltern in 1799, I built at the long island of Holstein a substantial flat-boat, adapted to the navigation of the Western rivers, on board of which I embarked in April for Natchez—a distance of sixteen hundred miles. The valley of the Holstein river to its junction with the Tennessee, and thence to S. W. Point, at the mouth of Clinch river, a distance of nearly 200 miles as the rivers meander, was very thinly settled—exhibiting only the incipient stages of Agriculture; half-cleared corn-fields, fat cattle, horses, and hogs, enjoying for the most part the luxury of wild grass, cane-brakes, and nuts of the forest. From S. W. Point to the mouth of the Tennessee, a distance of near 700 miles, thence to the mouth of Ohio, 60 miles, and thence to Natchez, 700 miles, was at that time a howling wilderness, of nearly fifteen hundred miles, with the exception of four small military posts—namely, *Massac*, *New-Madrid*, *Chickasaw Bluffs*, and the *Walnut-Hills*—neither of which posts was garrisoned by more than thirty to sixty men; nor had either place more than from five to twenty acres of land in cultivation. The Chickasaw Bluffs, the present site of Memphis, Tennessee, had just been occupied by a company of U. S. troops (commanded by the Revolutionary veteran Captain Pike, the venerable father of our late gallant General Z. M. Pike, who fell in the arms of victory in Canada in 1813.) Not a tree of the thick forest of the Bluff had been disturbed, save only what was needed to cover the company from the pelting of the storm. That beautiful Bluff which now sustains a flourishing city, and exports annually 150,000 bales of cotton, worth $5,000,000, could not then, nor for nearly twenty years after that period, furnish as much cotton or corn as would clothe and feed a single family; and the same, or nearly the same, may be said of Walnut-Hills, the present site of Vicksburg.

The immediate vicinity of Natchez and New-Orleans had indeed begun to contribute toward the cultivation of a supply of *cotton*, amounting to something more than sufficient to meet the expense of clearing and cultivating their lands—while the inhabitants of Louisiana were enjoying the proud satisfaction of having succeeded in making what they then deemed to be respectable crops of *sugar*.

The quantity, however, of *sugar* or *cotton* annually produced for exportation or for inland trade, prior to the year 1800, I have not been able to ascertain; but I learned from my friend, Daniel Clark, and other distinguished citizens of New-Orleans and Natchez in the years 1802–3, that these promising products of Agriculture (cotton and sugar), had prior to that period contributed greatly to improve the condition of the Agriculture of these sparse settlements, and give to the commerce of New-Orleans a degree of activity and an interest far surpassing anything which the occasional trade of Kentucky tobacco and provisions, or the *peltries* and *furs* obtained from the Indian trade, had ever produced. I am under the impression, however, that the settlement around Natchez, with the cotton-planters of Louisiana and West Florida, could not have furnished in any year prior to 1800 more than is now often brought to this city in one day—say 12,000 bales; nor that the supply of sugar could in any year prior to that period have exceeded 5,000 hogsheads.

When I state to you that the sugar crop of Louisiana has been gradually increasing, until it has amounted to 200,000 hogsheads in one year, (the last year,) I am sure I need not trespass upon your time by details, such as the statistics of the country will furnish you in abundance.

I will conclude with a concise outline of the progress of improvement in the valley of the Mississippi by presenting to you a few simple facts, embracing the principal causes and prominent results of this Herculean progress of improvement.

From the date of my *flat-boat trip* down the Holstein, Tennessee, Ohio, and Mississippi rivers, to the last year of the War of 1814–15—though the population of the Western States had grown from half a million to nearly three millions—yet until the last mentioned period, few men had the temerity to predict that this mighty river would ever afford such facilities to any description of *ascending boats or other vessels*, as to establish a respectable commercial intercourse between the vast bodies of fertile lands and mineral wealth of the upper and middle regions of the valley of the Mississippi and the sea. The great rapidity of the current, and the numerous snags and other impediments by which the navigation was obstructed, rendered such an intercourse almost hopeless. In May, 1799, I met three small barges carrying thirty tons burden, and navigated by 36 oars each. They then made but one trip in the year—departing from Louisville at the close of the sickly season in October, and returning thither in the following spring. Their price for freight was ten cents per pound, or twenty to twenty-five dollars per barrel for sugar or rum or brandy.

It was not until long after this period, that an account of Robert Fulton's discovery of the successful application of steam-power to boats and other vessels inspired me with the pleasing hope that the time was not far distant when boats of a larger class would be seen ascending the Mississippi river to Louisville, in less than one month. But it was not until the year 1821 that I ventured to predict that the time would come, when vessels carrying 800 tons burden might be seen by persons then living, departing from New Orleans with a full cargo, and running to Louisville, a distance of near fifteen hundred miles, in some few hours short of six days! This consummation, so long and fervently desired by me, I have had the inexpressible happiness of witnessing.

In this great triumph of the genius of Fulton will be found why it is that, in the short space of twenty-five years, the population of the valley of the Mississippi has grown from three millions to eleven millions; and, above all, that the chivalry of the West—the fighting men of the valley of the Mississippi—have multiplied from three hundred thousand to seventeen hundred thousand! Agriculture has increased in an equal ratio.

I must here break off my narrative, with a promise to complete it soon and send it by mail.

I am with great respect and esteem your friend,

J. S. SKINNER, Esq. Editor, &c. &c. EDMUND P. GAINES.

MAPLE SUGAR.

[From a great mass of newspaper scraps and other trash strung together in that enormous Agricultural Annual put out by the United States, called "*Report of the Commissioner of Patents*," we select for this Number what follows on the subject of *Maple Sugar*.

Who the "*we*" is who gives the profound advice about keeping the vessels *clean* and not using "half-decayed troughs with a liberal infusion of rain-water, dirt, &c."—as if common sense would not teach that—we don't know; neither can we help "we" to tell how much, or rather how *little* deduction is to be made from the aggregate Sugar crop of the United States, for the *Corn-stalk* Sugar! It would probably require the use of the most powerful magnifier!]

MAPLE SUGAR....A NEW ELEMENT.

To the Editor of the New-York Tribune: WINDSOR Co., Vermont, April, 1845.

We are just through our annual sugar season, and all feel satisfied. The crop is large, very large—more than in any year for some time. Every farmer has enough, and many have made one, two, or three tons.

Arrangements have been made to give more particular statistics of the amount. It is becoming of great importance to the State, and more interest is taken in improving the quality. But my object at this time is merely to call the attention of scientific men to the nature of a substance found in the sugar. The sugar-makers have always noticed that a kind of *grit* settles in the sugar and molasses after it is made. This varies greatly in quantity in different years. The present year the quantity is large. When the sugar was manufactured chiefly in the woods, it was supposed to be ashes or dirt, deposited during the process of evaporation; but the quantity is the same when the sap is evaporated in the house, and cleansed with the greatest care. From a small quantity (perhaps 50 lbs.) I obtained nearly a gill of this substance. When tasted with the sugar, it simply appears like sand; but upon dissolving the sugar, and repeatedly washing it with water, I obtained a substance nearly white, and with a *very pungent, alkaline taste*.

The presence of ammonia in sugar is mentioned by Liebig and Johnston, in their works upon agricultural chemistry; but, if I understand their remarks upon the subject, they refer only to a gas which arises during the process of evaporation. But here is a tangible salt, and of sufficient quantity to be of some interest.

Will some one, through your paper, give an account of the nature of the substance, and thus satisfy the curiosity of many of your readers, and perhaps add a new fact to the researches of science?*

As most persons who have not informed themselves on the subject imagine that we are indebted to cane sugar for our main supply, and that maple sugar is a petty neighborhood matter, not worth the figures employed to represent it, we propose to spend some space in stating the truth on this matter. We will exhibit, 1st, the amount produced; 2d, the proper way of manufacturing it; 3d, the proper treatment of the sugar-tree groves.

We shall confine our statistics to the most important northern and western States.

1. New-York produces annually...lbs.	10,048,109	9. Michigan.....	1,329,784
2. Ohio.....	6,363,386	Total of nine States.....	22,464,799
3. Vermont.....	4,647,934	Residue thus: Add for Maine, Massachusetts, Connecticut, Maryland Tennessee, Illinois, Iowa, Missouri, and Wisconsin.....	2,030,853
4. Indiana.....	3,727,795		24,495,652
5. Pennsylvania.....	2,265,755		
6. New-Hampshire.....	1,162,368		
7. Virginia.....	1,541,833		
8. Kentucky.....	1,377,835		

Something should be subtracted for beet-root and *corn-stalk sugar*.† But, on the other hand, the statistics are so much below the truth on maple sugar, that the deficiency may be set off against beet-root and corn-stalk sugar. That the figures do not more than represent the amount of *maple sugar* produced in these States, may be presumed from one case. Indiana is set down at 3,727,795 lbs.; but in the four counties of Washington, Warrick, Posey, and Harrison, no account seems to have been taken of this article. In Marion county, four of the first sugar-making townships, Warren, Lawrence, Centre, and Franklin, are not reckoned. If we suppose these four townships to average as much as the others in Marion county, they produced 77,648 lbs.; and instead of putting Marion county down at 97,064 lbs., it

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* Professor Mapes could probably do it off-hand. [*Ed. Farm. Lib.*

† We thought this humbug belonged to the tribe of animals—that it had served its purpose, lived out its time, and expired. [*Ed. Farm. Lib.*

should be 174,712 lbs. It is apparent, from this case, that in Indiana the estimate is far below the truth; and if it is half as much so in the other eight States enumerated,* then 22,464,799 lbs. is not more than a fair expression of the *maple sugar* alone.

Louisiana is the first sugar-growing State in the Union. Her produce, by the statistics of 1840, was 119,947,720, or nearly 120,000,000 lbs. The States of Mississippi, Alabama, Georgia, South Carolina, and Florida, together, add only 645,281 lbs. more.

Cane sugar in the United States	lbs. 120,593,001
Maple sugar in the United States	24,495,652

Thus about one-sixth of the sugar made annually in the United States is made from the maple tree.† It is to be remembered, too, that in Louisiana it is *the* staple, while at the north maple sugar has never been manufactured with any considerable skill, or regarded as a regular crop, but only a temporary device of economy. Now it only needs to be understood that maple sugar may be made so as to have the flavor of the best cane sugar, and that it may, at a trifling expense, be refined to white sugar, and the manufacture of it will become more general, more skillful, and may, in a little time, *entirely supersede the necessity of importing cane sugar.*‡ Indiana stands fourth in the rank of maple sugar-making States. Her annual product is at least *four million pounds*, which, at 6 cents a pound, amounts to $160,000 per annum. A little exertion would quickly run up the annual value of our home-made sugar to half a million of dollars.

Maple sugar now only brings about two-thirds the price of New Orleans. The fault is in the manufacturing of it.‖ The saccharine principle of the *cane and tree is exactly the same.* If the same care were employed in their manufacture, they would be undistinguishable, and maple sugar would be as salable as New-Orleans, and, if afforded at a less price, might supplant it in the market. The average quantity of sugar consumed in England by each individual is about thirty lbs. per annum. Marion county contains about 20,000 inhabitants. At 30 lbs. per head, the sugar consumed annually is not less than 600,000 lbs., and for the whole State 24,000,000 lbs., reckoning the population at 800,000. There is annually produced in this county about 175,000 lbs. of sugar; leaving about 425,000 lbs. to be purchased, which, at an average of *five* cents per pound, amounts for this single county to $21,250, a sum well worth saving, and by a little attention to the making of domestic sugar, very easily saved.

Maple Sugar Making.—1. Greater care must be taken in collecting the sap. Old and half-decayed wooden troughs, with a liberal infusion of leaves, dirt, &c., impart great impurity to the water. Rain-water, decayed vegetable matter, &c., add *chemical* ingredients to the sap, are troublesome to extract, and injure the quality if not removed. The expense of clean vessels may be a little more, but with care it could be more than made up in the quality of the sugar. Many are now using earthen crocks. These are cheap, easily cleaned, and every way desirable, with the single exception of breakage. But if wooden troughs are used, let them be kept scrupulously clean.

2. The kettles should be scoured thoroughly before use, and kept constantly clean. If rusty, or foul, or coated with burnt sugar, neither the color nor flavor can be perfect. Vinegar and sand have been used by experienced sugar-makers to scour the kettles with. It is best to have at least three to a range.

* Dr. J. C. Jackson puts Vermont at 6,000,000 lbs. per annum, while the census only gives about 4,000,000.

† The data of these calculations, it must be confessed, are *very* uncertain; and conclusions drawn from them as to the relative amounts of sugar produced in different States are to be regarded, at the very best, as problematical. We extract the following remarks from an article in the Western Literary Journal, from the pen of Charles Cist, an able statistical writer:

"It is not my purpose to go into an extended notice of the errors in the statistics connected with the census of 1840. A few examples will serve to show their character and extent. In the article of hemp, Ohio is stated to produce 9,080 tons, and Indiana 8,605 tons, either equal nearly to the product of Kentucky, which is reported at 9,992 tons, and almost equal, when united, to Missouri, to which 18,010 tons are given as the aggregate. Virginia is stated to raise 25,594 tons, almost equal to both Kentucky and Missouri, which are given as above at 28,002 tons. Now the indisputable fact is, that Kentucky and Missouri produce more hemp than all the rest of the United States, and ten times as much as either Ohio, Indiana, or Virginia, which three States are made to raise 50 per centum more than those two great hemp-producing States.

"The sugar of Louisiana is given at 119,947,720 lbs., equal to 120,000 hogsheads; 160 per cent. more than has been published in New-Orleans as the highest product of the five consecutive years, including and preceding 1840.

"But what is this to the wholesale figure-dealing which returns 3,160,949 tons of hay as the product of New-York for that article—a quantity sufficient to winter all the horses and mules in the United States!

"Other errors of great magnitude might be pointed out; such as making the tobacco product of Virginia 11,000 hhds., when her inspection records show 55,000 hhds. thrown into market as the crop of that year.—Who believes that 12,233 lbs. of pitch, resin, and turpentine, or the tenth part of that quantity, were manufactured in Louisiana in 1840, or that New-York produced 10,093,991 lbs. of maple sugar in a single year, or twenty such statements equally absurd, which I might take from the returns?"

Mr. Cist will find, in the appendix to Doct. Jackson's Final Report on the Geology of New Hampshire, a statement that Vermont makes 6,000,000 lbs. of sugar annually. If this be so, we may, without extravagance, suppose that New York reaches 10,000,000 lbs. So far as we have collateral means of judging, the amount of maple sugar is *under*stated in the census of 1840.

‡ Credat Judæus, &c. [*Ed. Farm. Lib.*

‖ Would not self-interest have accomplished before now a result of so much importance, as it leads men to do in all other equally obvious cases. [*Ed. Farm. Lib.*

All vegetable juices contain *acids*, and acids resist the process of crystalization.

Dr. J. C. Jackson* directs one *measured ounce* (one-fourth of a gill) of pure lime-water to be added to every gallon of sap. This neutralizes the acid, and not only facilitates the granulation, but gives sugar in a free state, now too generally acid and deliquescent, besides being charged with salts of the oxide of iron, insomuch that it ordinarily strikes a black color with tea.

The process of making a pure white sugar is simple and unexpensive. The lime added to the sap, combining with the peculiar acid of the maple, forms a neutral salt; this salt is found to be easily soluble in alcohol. Dr. Jackson recommends the following process:—Procure sheet-iron *cones*, with an aperture at the small end or apex; let it be coated with white lead and boiled linseed oil, and thoroughly dried, so that no part can come off. [We do not know why earthen cones, unglazed and painted, would not answer equally well, besides being much cheaper.] Let the sugar be put into these cones, stopping the hole in the lower end until it is entirely cool. Then remove the stopper, and pour upon the base a quantity of strong whisky or fourth proof rum;† allow this to filtrate through until the sugar is white. When the loaf is dried it will be pure white sugar, with the exception of the alcohol. To get rid of this, dissolve the sugar in pure boiling hot water and let it evaparate until it is dense enough to crystalize. Then put it again into the cone-moulds and let it harden. The dribblets which come away from the cone while the whisky is draining may be used for making vinegar. It is sometimes the case that whisky would, if freely used in a sugar camp, go off in a wrong direction, benefiting neither the sugar nor the sugar-maker.—If, on this account, any prefer another mode, let them make a *saturated* solution of loaf sugar, and pour it, in place of the whisky, upon the base of the cones. Although the sugar will not be quite as white, the *drainings* will form an excellent molasses, whereas the drainings by the former method are good only for vinegar.

Care of Sugar Orchards.—It is grievous to witness the waste committed upon valuable groves of sugar trees. If the special object was to destroy them, it could hardly be better reached than by the methods now employed. The holes are carelessly made, and often the abominable practice is seen of cutting channels in the tree with an ax. The man who will murder his trees in this tomahawk and scalping-knife manner, is just the man that Æsop meant when he made the fable of a fellow who killed his goose to get at once all the golden eggs. With good care, and allowing them occasionally a year of rest, a sugar-grove may last for centuries.

1. As soon as possible get your sugar-grove laid down to grass, clear out under-brush, thin out timber and useless trees. Trees in open land make about *six pounds* of sugar, and forest trees only about *four* pounds, to the season. As the maple is peculiarly rich in potash, (four-fifths of the potash exported is made from sugar-maple,) it is evident that it requires that substance in the soil. Upon this account we should advise a liberal use of wood-ashes upon the soil of sugar-groves.

2. *Tapping Trees.*—Two taps are usually enough—never more than three; for though as many as 24 have been inserted at once without killing the tree, regard ought to be had to the use of the tree through a long series of years. At first, bore about two inches; after ten or twelve days remove the tap, and go one or two inches deeper. By this method more sap will be obtained than by going down to the colored wood at first. I state, upon the authority of Wm. Tripure, a Shaker, of Canterbury, N. H., that about 7 lbs. of sugar may be made from a barrel of 20 gallons, or four lbs. the tree for forest trees; and two men and one boy will tend a thousand trees, making 4,000 lbs. of sugar.

3. We would recommend the setting of pasture lands and roadsides of the farm with sugar-maple trees. Their growth is rapid, and no tree combines more valuable properties. It is a beautiful shade tree; it is excellent for fuel; it is much used for manufacturing purposes; its ashes are valuable for potash, and its sap is rich in sugar. There are 27 species of the maple known; 12 of them are indigenous to this continent. All of these have a saccharine sap, but only two to a degree sufficient for practical purposes, viz: *acer saccharinum*, or the common sugar-maple, and *acer nigrum*, or the *black* sugar-maple. The sap of these contains about half as much sugar as the juice of the sugar-cane. One gallon of pasture maple sap contains, on an average, 3,451 grains of sugar; and one gallon of cane-juice, (in Jamaica,) on an average, yields 7,000 grains of sugar.

But the cane is subject to the necessity of annual and careful cultivation, and its manufacture is comparatively expensive and difficult. Whereas the maple is a permanent tree; requires no cultivation; may be raised on the borders of farms without taking up ground, and its sap is easily convertible into sugar, and, if carefully made, into sugar as good as cane-sugar can be. Add to the above considerations that the sugar-making period with us is a time of comparative leisure with the farmer, and the motives for attention to this subject of domestic sugar-making seem to be complete.

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* Appendix to Final Report on the Geology and Mineralogy of New Hampshire, page 361. This admirable report is an able exposition of the benefit of public State surveys.

† If those who drink whisky would pour it on the sugar in the refining cones, instead of upon sugar in tumblers, it would refine *them* as much as it does the sugar, performing two valuable processes at once.

PASTORAL LIFE AND MANUFACTURES OF THE ANCIENTS.

THE HISTORY OF SILK, COTTON, LINEN, WOOL, and other Fibrous Substances; including Observations on Spinning, Dyeing, and Weaving. Also an account of the Pastoral Life of the Ancients, their Social state and attainments in the Domestic Arts—with Appendices. Illustrated by Steel Engravings. New-York: Harper & Brothers, 82 Cliff-st.

To this work of elegant literature we may have recourse for an apt illustration to enforce the views we have advanced as to the nature and variety of knowledge with which every farmer should endeavor to store and embellish the mind of his son.

As it does not follow that a garden, enriched with heavy crops of potatoes and carrots, should not also be beautified with roses and lilies; so neither is it becoming in the man of the country to study only the time to sow and the depth to plant—how to fatten and when to shear or to slaughter. The idea that practical farmers should not study botany, or mineralogy, or make pretension to any knowledge of Natural History, and other of the many attractive and interesting subjects, in natural and close association and alliance with their position and pursuits, has its origin in the arrogant and supercilious presumption of other classes, or in a mean under estimate of what is becoming to themselves. The truth is that there is no business or profession which branches off into so many and such elegant walks of science and literature, unless it be perhaps that of the medical profession. True, the lawyer who is not content to be a mere pettifogger, should explore the field of history, be familiar with the great poets, and often has occasion for some elementary knowledge of several sciences to enable him the closer to examine witnesses, and to illustrate the principles sometimes of medical jurisprudence; sometimes of navigation, sometimes of vegetable physiology; but the *gravamen*, the great labor of his professional life, is *the dry study of statute law.* To the farmer, the book of Nature is open to invite, instruct and amuse him on every hand, and if a right-minded man, he can neither be content with himself, nor qualified to fill the high and responsible function of parent to his children, if he does not give a portion of his time to the acquirement of such literary knowledge, and such acquaintance with Natural History, as will enable him to understand the nature, habits, and properties of the things that surround him in his every day walks. To suppose that it becomes him to confine himself tamely and quietly to the mere practical working details of his profession, is an idea fit to be inculcated by demagogues who would brutalize *and then ride him:* it is an insult which his own self respect cannot too promptly resent. Such at least are our humble notions, and on such notions we shall act in the management of this Journal.

Were we called upon to indicate, for example, the sort of recreation in the way of reading or study, in which it may be allowable and meet for him to indulge at leisure moments, we might well refer for illustration to the book in hand, "PASTORAL LIFE AND MANUFACTURES OF THE ANCIENTS." See for instance to what variety of anecdote, information, and even poetry it treats you, on the subject of the humble but useful *silk-worm*—a poor insect, for whose products in a foreign land our industry is taxed some ten millions a year. Now ask any of our young men, just turned out from *an ordinary* old-fashioned country school, or most of our dandies grown to man's estate, to tell you all they know

about the silk-worm, and compare it with what follows. These are the sort of books which, along with standard works on Agriculture, parents should place in reach of their children. We take from its pages the following:

DESCRIPTION OF THE SILK-WORM, &c.

ITS NATURAL HISTORY AND HABITS.

It can never be too strongly impressed upon a mind anxious for the acquisition of knowledge, that the commonest things by which we are surrounded are deserving of minute and careful attention. The most profound investigations of Philosophy are necessarily connected with the ordinary circumstances of our being, and of the world in which our every-day life is spent. With regard to our own existence, the pulsation of the heart, the act of respiration, the voluntary movement of our limbs, the condition of sleep, are among the most ordinary operations of our nature; and yet how long were the wisest of men struggling with dark and bewildering speculations before they could offer anything like a satisfactory solution of these phenomena, and how far are we still from an accurate and complete knowledge of them! The science of Meteorology, which attempts to explain to us the philosophy of matters constantly before our eyes, as dew, mist, and rain, is dependent for its illustrations upon a knowledge of the most complicated facts, such as the influence of heat and electricity upon the air; and this knowledge is at present so imperfect that even these common occurrences of the weather, which men have been observing and reasoning upon for ages, are by no means satisfactorily explained, or reduced to the precision that every science should aspire to. Yet, however difficult it may be entirely to comprehend the phenomena we daily witness, everything in Nature is full of instruction. Thus the humblest flower of the field, although, to one whose curiosity has not been excited, and whose understanding has, therefore, remained uninformed, it may appear worthless and contemptible, is valuable to the botanist, not only with regard to its place in the arrangement of this portion of the Creator's works, but as it leads his mind forward to the consideration of those beautiful provisions for the support of vegetable life, which is the part of the physiologist to study and admire.*

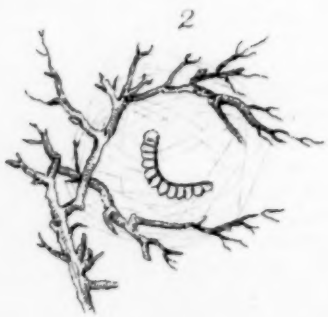
This train of reasoning is peculiarly applicable to the economy of insects. They constitute a very large and interesting part of the animal kingdom. They are everywhere about us. The *spider* weaves his curious web in our houses; the *caterpillar* constructs his silken cell in our gardens; the *wasp* that hovers over our food has a nest not far removed from us, which she has assisted to build with the nicest art; the *beetle* that crawls across our path is also an ingenious and laborious mechanic, and has some curious instincts to exhibit to those who feel an interest in watching his movements; and the *moth* that eats into our clothes has something to plead for our pity, for he came, like us, naked into the world, and he has destroyed our garments, not in malice or wantonness, but that he may clothe himself with the same wool which we have stripped from the sheep. An observation of the habits of these little creatures is full of valuable lessons, which the abundance of the examples has no tendency to diminish. The more such observations are multiplied, the more we are led forward to the freshest and the most delightful parts of knowledge; the more do we learn to estimate rightly the extraordinary provisions and most abundant resources of a Creative Providence; and the better do we appreciate our own relations with all the infinite varieties of Nature, and our dependence, in common with the *ephemeron* that flutters its little hour in the summer sun, upon that Being in whose scheme of existence the humblest as well as the highest creature has its destined purposes. "If you speak of a *stone*," says St. Basil, "if you speak of a *fly*, a *gnat*, or a *bee*, your conversation will be a sort of demonstration of His power whose hand formed them, for the wisdom of the workman is commonly perceived in that which is of little size. He who has stretched out the heavens, and dug up the bottom of the sea, is also He who has pierced a passage through the sting of the bee for the ejection of its poison."

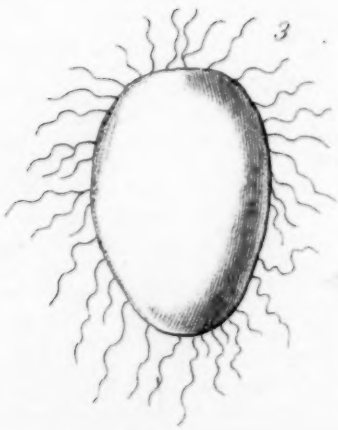
If it be granted that making discoveries is one of the most satisfactory of human pleasures, then we may without hesitation affirm that the study of insects is one of the most delightful branches of Natural History, for it affords peculiar facilities for its pursuit. These facilities are found in the almost inexhaustible variety which insects present to the curious observer.

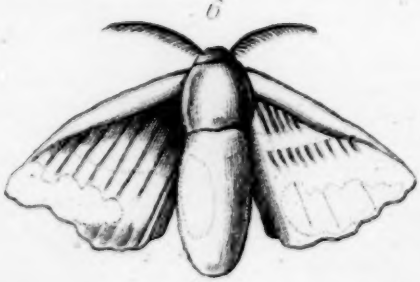
There is, perhaps, no situation in which the lover of Nature and the observer of animal life may not find opportunities for increasing his store of facts. It is told of a state prisoner under a cruel and rigorous despotism, that when he was excluded from all commerce with mankind, and was shut out from books, he took an interest and found consolation in the visits of a *spider*; and there is no improbability in the story. The operations of that persecuted creature are among the most extraordinary exhibitions of mechanical ingenuity; and a daily watching of the workings of its instinct would beget admiration in a rightly constituted mind. The poor prisoner had abundant leisure for the speculations in which the spider's web would enchain his understanding. We have all of us, at one period or other of our lives, been struck with some singular evidence of contrivance in the economy of insects, which we have

* "Insect Architecture," vol. i. p. 9. London: Charles Knight & Co., Ludgate-st. 1845.

Plate III







Silk-Worm, Cocoons, Chrysalis, Moths, and Pinna.

seen with our own eyes. Want of leisure, and probably want of knowledge, have prevented us from following up the curiosity which for a moment was excited. And yet some such accident has made men naturalists, in the highest meaning of the term. Bonnet, evidently speaking of himself, says, "I knew a naturalist, who, when he was seventeen years of age, having heard of the operations of the ant-lion, began by doubting them. He had no rest till he had examined into them; and he verified them, he admired them, he discovered new facts, and soon became the disciple and the friend of the Pliny of France*" (Reaumur). It is not the happy fortune of many to be able to devote themselves exclusively to the study of Nature, unquestionably the most fascinating of human employments; but almost any one may acquire sufficient knowledge to be able to derive a high gratification from beholding the more common operations of animal life. His materials for contemplation are always before him.

The silk-worm is a species of caterpillar which, like all other insects of the same class, undergoes a variety of changes during the short period of its life; assuming, in each of three successive transformations, *a form wholly dissimilar to that with which it was previously invested.*

Among the great variety of caterpillars, the descriptions of which are to be found in the records of Natural History, the silk-worm occupies a place far above the rest. Not only is our attention called to the examination of its various transformations, by the desire of satisfying our curiosity as entomologists, but our artificial wants incite us likewise to the study of its nature and habits, that we may best and most profitably apply its instinctive industry to our own advantage.

It has been well observed by Pullein, a writer on this subject, that "there is scarcely anything among the various wonders which the animal creation affords, more admirable than the variety of changes which the silk-worm undergoes;" but the curious texture of that silken covering with which it surrounds itself when it arrives at the perfection of its animal life, vastly surpasses what is made by other animals of this class. All the caterpillar kind do, indeed, pass through changes like those of the silk-worm, and the beauty of many in their butterfly state greatly exceeds it; but the covering which they put on before this mutation is poor and mean, when compared to that golden tissue in which the silk-worm wraps itself. They, indeed, come forth in a variety of colors, their wings bedropped with gold and scarlet, yet are they but the beings of a summer's day, both their life and beauty quickly vanish, and they leave no remembrance after them; but the silk-worm leaves behind it such beautiful, such beneficial monuments, as at once to record both the wisdom of their Creator and His bounty to man."

Silk-worms proceed from eggs which are deposited during the summer by a grayish kind of moth, of the genus palæna. These eggs are about equal in size to a grain of mustard seed: their color when first laid is yellow; but in three or four days after, they acquire a bluish cast. In temperate climates, and by using proper precautions, these eggs may be preserved during the winter and spring, without hatching. The period of their animation may be accelerated or retarded by artificial means, so as to agree with the time when the natural food of the insect shall appear in ample abundance for its support.

All the curious changes and labors which accompany and characterize the life of the silk-worm are performed within the space of a very few weeks. This period varies, indeed, according to the climate or temperature in which its life is passed; all its vital functions being quickened, and their duration proportionally abridged, by warmth. With this sole variance, its progressions are alike in all climates, and the same mutations accompany its course.

The three successive states of being put on by this insect are, that of the worm or caterpillar, of the chrysalis or aurelia, and moth. In addition to these more decided transformations, the progress of the silk-worm in its *caterpillar state* is marked by *five distinct stages of being.*

When first hatched, it appears as a small black worm about a quarter of an inch in length. Its first indication of animation is the desire which it evinces for obtaining food, in search of which, if not immediately supplied, it will exhibit more power of locomotion than characterizes it any other period. So small is the desire of change on the part of these insects, that of the generality it may be said their own spontaneous will seldom leads them to travel over a greater space than three feet throughout the whole duration of their lives. Even when hungry, the worm still clings to the skeleton of the leaf from which its nourishment was last derived. If, by the continued cravings of its appetite, it should be at length incited to the effort necessary for changing its position, it will sometimes wander as far as the edge of the tray wherein it is confined, and some few have been found sufficiently adventurous to cling to its rim; but the smell of fresh leaves will instantly allure them back. It would add incalculably to the labors and cares of their attendants, if silk-worms were endowed with a more rambling disposition. So useful is this peculiarity of their nature, that one is irresistibly tempted to consider it the result of design, and a part of that beautiful system of the fitness of

* Contemplation de la Nature, part ii. ch. 42.

things, which the student of Natural History has so many opportunities of contemplating with delight and admiration.

In about eight days from its being hatched, its head becomes perceptibly larger, and the worm is attacked by its first sickness. This lasts for three days; during which time it refuses food, and remains motionless as in a kind of lethargy. Some have thought this to be sleep, but the fatal termination which so frequently attends these sicknesses seems to afford a denial to this hypothesis. The silk-worm increases its size so considerable, and in so short a space of time,—its weight being multiplied many thousand fold in the course of one month,—that if only one skin had been assigned to it, which would serve for its whole caterpillar state, it would with difficulty have distended itself sufficiently to keep pace with the insect's growth. The economy of Nature has therefore admirably provided the embryos of other skins, destined to be successively called into use; and this sickness of the worm, and its disinclination for food, may very probably be occasioned by the pressure of the skin, now become too small for the body which it encases.

At the end of the third day from its first refusal of food, the animal appears, on that account much wasted in its bodily frame; a circumstance which materially assists in the painful operation of casting its skin: this it now proceeds to accomplish. To facilitate this moulting, a sort of humor is thrown off by the worm, which spreading between its body and the skin about to be abandoned, lubricates their surfaces, and causes them to separate the more readily. The insect also emits from its body silken traces, which, adhering to the spot where it rests, serve to confine the skin to its then existing position. These preliminary steps seem to call for some considerable exertion, as after them the worm remains quiet for a short space of time, to recover from its fatigue. It then proceeds, by rubbing its head among the leafy fibres surrounding it, to disencumber itself of the scaly covering. Its next effort is to break through the skin nearest to the head, which, as it is there the smallest, calls for the greatest exertion; and no sooner is this accomplished and the two front legs are disengaged, than the remainder of the body is quickly drawn forth, the skin being still fastened to the spot in the manner already described.

This moulting is so complete, *that not only is the whole covering of the body cast off, but that of the feet, the entire skull, and even the jaws, including the teeth.* These several parts may be discerned by the unassisted eye; but become very apparent when viewed through a magnifying lens of moderate power.

In two or three minutes from the beginning of its efforts the worm is wholly freed, and again puts on the appearance of health and vigor; feeding with recruited appetite upon its leafy banquet. It sometimes happens that the outer skin refuses to detach itself wholly, but breaks and leaves an annular portion adhering to the extremity of his body, from which all the struggles of the insect cannot wholly disengage it. The pressure thus occasioned induces swelling and inflammation in other parts of the body; and, after efforts of greater or less duration, death generally terminates its suffering.

Worms newly freed from their exuviæ are easily distinguished from others by the pale color and wrinkled appearance of their new skin. This latter quality, however, soon disappears, through the repletion and growth of the insect, which continues to feed during five days. At this time its length will be increased to half an inch; when it is attacked by a second sickness, followed by a second moulting, the manner of performing which is exactly similar to the former. Its appetite then again returns, and is indulged other five days, in the course of which time its length increases to three-quarters of an inch: it then undergoes its third sickness and moulting. These being passed in all respects like the former, and five more days of feed having followed, it is seized by its fourth sickness, and casts its skin for the last time in the caterpillar state. The worm is now about one and a half or two inches long. This last change being finished, the worm devours its food most voraciously, and increases rapidly in size during ten days.

The silk-worm has now attained to its full growth, and is a slender caterpillar from two and a half to three inches in length. (See Plate, Fig. 1.) The peculiarities of its structure may be better examined now than in its earlier ages. It can readily be seen that the worm has twelve membraneous rings round its body, parallel to each other; and which, answering to the movements of the animal, mutually contract and elongate. It has sixteen legs, in pairs: six in front, which are covered with a sort of shell or scale, and are placed under the three first rings, and cannot be either sensibly lengthened, or their position altered. The other ten legs are called holders: these are membraneous, flexible, and attached to the body under the rings, being furnished with little hooks, which assist the insect in climbing. The skull is enclosed in a scaly substance, similar to the covering of the first six legs. The jaws are indented or serrated like the teeth of a saw, and their strength is great, considering the size of the insect. Its mouth is peculiar, having a vertical instead of an horizontal aperture; and the worm is furnished with eighteen breathing holes, placed at equal distances down the body, nine on each side. Each of these holes is supposed to be the termination of a particular organ of respiration. On either side of the head, near to the mouth, seven small eyes may be discerned. The two broad appearances higher upon the head, which are frequently mistaken for eyes, are bones of the skull. The two apertures through which the worm draws its

silken filament are placed just beneath the jaw, and close to each other; these being exceedingly minute.

At the period above-mentioned the desire of the worm for food begins to abate: the first symptom of this is the appearance of the leaves nibbled into small portions and wasted. It soon after entirely ceases even to touch the leaves; appears restless and uneasy; erects its head; and moves about from side to side, with a circular motion, in quest of a place wherein it can commence its labor of spinning. Its color is now light green, with some mixture of a darker hue. In twenty-four hours from the time of its abstaining from food, the material for forming its silk will be digested in its reservoirs; its green color will disappear; its body will have acquired a degree of glossness, and have become partially transparent toward its neck. Before the worm is quite prepared to spin, its body will have acquired greater firmness, and be in a trifling measure lessened in size.

"The substance," says Mr. Porter, "of which the silk is composed, *is secreted in the form of a fine yellow transparent gum in two separate vessels of slender dimensions, wound, as it were, on two spindles in the stomach; and if unfolded, these vessels would be about ten inches in length.*"* This statement is proved to be erroneous, as the reader will perceive, at the conclusion of this chapter.

When the worm has fixed upon some angle, or hollow place, whose dimensions agree with the size of its intended silken ball or cocoon, it begins its labor by throwing forth thin and irregular threads, (See Plate, Fig. 2.) which are intended to support its future dwelling.

During the first day, the insect forms upons these a loose structure of an oval shape, which is called floss silk, and within which covering, in the three following days, it forms the firm and consistent yellow ball; the laborer, of course, always remaining on the inside of the sphere which it is forming.†

The silken filament, which when drawn out appears to be one thread, is composed of two fibres, unwound through the two orifices before described; and these fibres are brought together by means of two hooks, placed within the silk-worm's mouth for the purpose. The worm rests on its lower extremity throughout the unwinding operation, and employs its mouth and front legs in the task of directing and uniting the two filaments. The filament is not wound in regular concentric circles round the interior surface of the ball, but in spots, going backward and forward with a sort of wavy motion. This apparently irregular manner of proceeding is plainly perceptible when the silk is being reeled off the ball; which does not make more than one or two entire revolutions while ten or twelve yards of silk are being transferred to the reel.‡

At the end of the third or fourth day, the worm will have completed its task; and we have then a *silk cocoon*, (See Plate, Fig. 3.) with the worm imprisoned in its center; the cocoon being from an inch to an inch and half long, and of a yellow or orange color.

When the insect has finished its labor of unwinding, it smears the entire internal surface of the cocoon with a peculiar kind of gum, very similar in its nature to the matter which forms the silk itself; and this is no doubt designed as a shield against rain or the humidity of the atmosphere, for the chrysalis in its natural state; when of course it would be subject to all varieties of weather. The silken filament of which the ball is made up, is likewise accompanied, throughout its entire length, by a portion of gum, which serves to give firmness and consistency to its texture; and assists in rendering the dwelling of the chrysalis impervious to moisture. This office it performs so well that when, for the purpose of reeling the silk with greater facility, the balls are thrown into basins of hot water, they swim on the top with all the buoyancy of bladders; nor, unless the ball be imperfectly formed, does the water penetrate within until the silk is nearly all unwound. In the Plate, Figure 4, the cocoons are drawn two-thirds of the usual size, and are shown with part of the outward floss silk removed.

The continual emission of the silken material during the formation of its envelop, together with its natural evaporation, uncompensated by food, causes the worm gradually to contract

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* Porter's "Treatise on the Silk Manufacture," p. 111.

† If at this time any of the threads intended for the support of the cocoon should be broken, the worm will find, in the progress of its work, that the ball, not being properly poised, becomes unsteady, so that the insect is unable properly to go forward with its labors. Under these circumstances the worm pierces and altogether quits the unfinished cocoon, and throws out its remaining threads at random wherever it passes; by which means the silk is wholly lost, and the worm, finding no place wherein to prepare for its change, dies without having effected it. It may sometimes happen, but such a thing is of unfrequent occurrence, that the preparatory threads before-mentioned are broken by another worm working in the neighborhood, when the same unsatisfactory result will be experienced.

[*Obs. on the Culture of Silk, by* A. STEVENSON.

‡ Mr Robinet, of Paris, made the following curious calculation on the movements a silk-worm must make in forming a cocoon supposed to contain a thread of 1500 metres. It is known, says Mr. Robinet, that the silk-worm, in forming his cocoon, does not *spin* the silken filament in concentric circles round the interior surface of the ball, but in a zigzag manner. This it effects by the motions of its head. Now if each one of these motions gives half a centimetre of the silken filament, it follows that the worm must make 300,000 motions of its head to form it; and if the labor requires 72 hours in the performance, the creature makes 100,000 motions every 24 hours, 4,166 per hour, 69 per minute, and a little more than one in a second!

in bulk; it becomes wrinkled, and the rings of its body approach nearer to each other and appear more decidedly marked. When the ball is finished, the insect rests awhile from its toil, and then throws off its caterpillar garb. If the cocoon be now opened, its inhabitant will appear in the form of a chrysalis or aurelia, in shape somewhat resembling a kidney-bean (See Plate, Figure 5,) but pointed at one end, having a smooth brown skin. Its former covering, so dissimilar to the one now assumed, will be found lying beside it.

The account which has been given of the progressions of the silk-worm shows that, in its various modifications, *the animal organization of the insect has been always tending toward its simplification.* Count Dandolo, writing upon this subject, observes, "Thus the caterpillar is in the first instance composed of animal, silky, and excremental particles; this forms the state of the *growing caterpillar:* in the next stage it is composed of animal and silky particles; it is then the *mature caterpillar:* and lastly, it is reduced to the animal particles alone; and is termed in this state the *chrysalis.* The poet Cowper, in the following lines, beautifully illustrates this subject:

The beams of April, ere it goes,
A worm, scarce visible, disclose;
All winter long content to dwell
The tenant of his native shell.
The same prolific season gives
The sustenance by which he lives,
The mulberry leaf, a simple store,
That serves him—till he needs no more!
For, his dimensions once complete,
Thenceforth none ever sees him eat:
Though till his growing time be past
Scarce ever is he seen to fast.
That hour arrived, his work begins:
He spins and weaves, and weaves and spins:
Till circle upon circle, wound
Careless around him and around,
Conceals him with a veil, though slight,
Impervious to the keenest sight.
Thus self-enclosed, as in a cask,
At length he finishes his task:
And, though a worm when he was lost,
Or caterpillar at the most,
When next we see him, wings he wears,
And in papilio pomp appears;
Becomes oviparous; supplies
With future worms and future flies
The next ensuing year—and dies!
Well were it for the world if all
Who creep about this earthly ball,
Though shorter-lived than most he be,
Were useful in their kind as he.

It has been already noticed that the progressions of the insects are accelerated by an increase of temperature; and some variation will equally be experienced where different modes of treatment are followed; and, in particular, where different periods of the year are chosen in which to produce and rear the worm. Malpighius, in his "Anatomy of the Silk Worm," says, that worms which he hatched in May were eleven days old ere they were attacked by their first sickness; others hatched in July were ten days, and those brought forth in August nine days, before they refused their food, preparatory to their first moulting. Eight days appear to be the most usual term for their first attack; and by his judicious treatment Count Dandolo shortened even this term by two days. In Europe, except where recourse is had to artificial aid, the term of the caterpillar state is usually that which has been already mentioned.

Sudden transitions from cold to heat, or *vice versa*, are highly injurious to the silk-worm; but it can bear a very high degree of heat, if uniformly maintained, without sustaining injury. Count Dandolo observed, that "the greater the degree of heat in which it is reared, the more acute are its wants, the more rapid its pleasures, and the shorter its existence." Monsieur Boissier de Sauvagues made many experiments on this point. One year, when by the early appearance of the mulberry leaves, which were developed by the end of April, he was forced to hurry forward the operations of his filature, he raised the heat of the apartment in which the newly hatched worms were placed to 100°; gradually diminishing this during their first and second ages to 95°. In consequence of the animal excitement thus induced, there elapsed only nine days between the hatching and the second moulting inclusively. It was the general opinion of those cultivators who witnessed the experiment, that the insects would not be able to exist in so intensely heated an atmosphere. The walls of the apartment, and the wicker hurdles on which the worms were placed, could scarcely be touched from the great heat, and yet all the changes and progressions went forward perfectly well, and a most abundant crop of silk was the result.

The same gentleman, on a subsequent occasion, exposed his brood to the temperature of 93° to 95° during their first age; of 89° to 91° in the second age; and remarked that the attendant circumstances were the same as in his former experiment, the changes of the worm being performed in the same space of time; whence he came to the conclusion, that it is not practicable to accelerate their progress beyond a certain point by any superadditions of heat. In both of these experiments the quantity of food consumed was as great as is usually given during the longer period employed in the common manner of rearing. After the second moulting had taken place in the last experiment, the temperature was lowered to 82°; and it is remarkable that the worms occupied only five days in completing their third and fourth changes, although others which had been accustomed to this lower degree from their birth occupied seven or eight days for each of these moultings. It would therefore seem that the constitution of the insects can be affected, and an impetus given to their functions at the

period of their first animation, which accompanies them through their after stages. So far from this forcing system proving injurious to the health of silk-worms, M. de Sauvagues found that his broods were unusually healthy; and that while the labors of cultivation were abridged in their duration, much of the attendant anxiety was removed.

Like other caterpillars, the silk-worm is not a warm-blooded animal, and its temperature is therefore always equal to that of the atmosphere in which it is placed. In the silk-producing countries, where modes of artificial heating have not been studied practically and scientifically, the difficulty and expense that must attend the prosecution of this heating system, form abundant reasons why it cannot be generally adopted. The great susceptibility of the insect to atmospheric influences would also in a great degree render unsuitable the more common arrangements for the purpose. The plan of warming apartments by means of stoves, in its passage through which the air becomes highly heated before it mixes with and raises the general temperature of the air in the chamber, is liable to this inconvenience—that the portion so introduced, having its vital property impaired by the burning heat through which it has passed, injures proportionably the respirable quality of the whole atmosphere; an effect which is easily perceptible by those who inhale it. A better plan of heating has lately been suggested, and is rapidly coming into practice, viz., of warming buildings by a current of hot water (an American invention,) which is, by a very simple process, kept constantly flowing in close channels through the apartment, where it continually gives off its heat by radiation; and the degree of this being far below the point which is injurious to the vital quality of air, the evil before alluded to is avoided. If the expense of fuel be not too great, as compared with that of the labor which would be saved by this invention, the adoption in silk countries of such a mode of raising and regulating the temperature might, probably, prove advantageous.

The silk-worm remains in the form of a chrysalis for periods which, according to the climate or the temperature wherein it may be placed, vary from fifteen to thirty days. In India, the time is much shorter; in Spain and Italy, eighteen to twenty days. In France three weeks; and in the climate of England, when unaccelerated by artificial means, thirty days will elapse from the time the insect begins to spin until it emerges in its last and perfect form. It then throws off the shroud which had confined it in *seeming lifelessness*, and appears as a large moth of a grayish-white color, furnished with four wings, two eyes, and two black horns or antlers which present a feathery appearance (See Plate, Fig. 6.).

If left until this period within the cocoon, the moth takes immediate measures for its extrication: ejecting from its mouth a liquor with which it moistens and lessens the adhesiveness of the gum wherewith it had lined the interior surface of its dwelling, and the insect is enabled, by frequent motions of its head, to loosen without breaking, the texture of the ball; then using its hooked feet, it pushes aside the filaments and makes a passage for itself into light and freedom. It is erroneously said that the moth recovers its liberty by gnawing the silken threads; but it is found, on the contrary, that if carefully unwound, their continuity is by this means rarely broken.

One of the most remarkable circumstances connected with the Natural History of silk-worms, is the degree in which their bulk and weight are increased, and the limited time wherein that increase is attained. Count Dandolo, who appears to have neglected nothing that could tend to the right understanding of the subject, and to the consequent improvement of the processes employed, had patience enough to count and weigh many hundred thousand eggs, as well as well as follow out to the ultimate result his inquiries respecting their produce. He found that on an average sixty-eight sound silk-worms' eggs weighed one grain. One ounce,* therefore, comprised, 39,163 eggs. But one-twelfth part of this weight evaporates previous to hatching, and the shells are equal to one-fifth more. If, therefore, from one ounce, composed of 576 grains, 48 grains be deducted for evaporation, and 115 for the shells, 413 grains will remain, equal to the weight of 39,168 young worms; and at this rate, 54,526 of the insects when newly hatched, are required to make up the ounce. After the first casting of the skin, 3,840 worms are found to have this weight, so that the bulk and weight of the insects have in a few days been multiplied more than *fourteen times*. After the second change 610 worms weigh an ounce, their weight being increased in the intermediate time six fold. In the week passed between the second and third ages, the number of insects required to make up the same weight, decreases from 610 to 144, their weight being therefore more than quadrupled. During the fourth age, a similar rate of increase is maintained: thirty-five worms now weigh an ounce. The fifth age of the caterpillar comprises nearly a third part of its brief existence, and has been described, by an enthusiastic writer on the subject, as the happiest period of its life, during which it rapidly increases in size, preparing and secreting the material it is about to spin. When the silk-worms are fully grown, and have arrived at their period of finally rejecting food, six of them make up the weight of an ounce. They have, therefore, since their last change, again added to their weight *six fold*.

It is thus seen that, in a few short weeks, the insect has multiplied its weight more than

* This ounce contains 576 grains; 8.5325 of these grains equal seven grains troy. One ounce avoirdupois is therefore equal to about 533 grains, and between 11-12 and 11-13 ounce avoirdupois equals one of the above ounces.

nine thousand fold! From this period, and during the whole of its two succeeding states of being, the worm imbibes no nourishment, and gradually diminishes in weight; being supported by its own substance and appearing to find sufficient occupation in forming its silken web, and providing successors for our service, without indulging that grosser appetite which forms the beginning and the end of their desires during their caterpillar existence.

The moth enjoys its liberty for only a brief space. Its first employment is to seek its mate; after which the female deposits her eggs; and both in the course of two or three days after, end their being.

"FORMATION OF SILK." By M. H. Straus, of Durckheim.—"It is generally admitted by naturalists that the thread of the caterpillar is produced by a simple emission of liquid matter through the orifice of the spinner, and that it acquires solidity at once from the drying influence of the air. It was easy to entertain such an hypothesis, for nothing is more simple than the formation of a very fine thread by such a process. But a little reflection will soon show us, even *a priori*, that it is not possible; for how can we comprehend that so fine a fibre, liquid at the instant of its issue from the aperture, should *instantly* acquire such a consistence as to bear the weight of the animal suspended by it, and at the same time that it is rapidly produced? Though the fluid, holding the silk in solution, should be quickly volatilized, it must still be a matter of conjecture, how the animal suspended by his thread could be able to arrest its issue, holding on only by the thread itself, for it cannot pinch the thread, seeing that it is only in a liquid state inside, and the thread cannot be glued to the edge of the opening, as its rapid adhesion would prevent its issue while the animal is spinning. A little examination would satisfy us that silk cannot be produced in this manner, but that it is secreted in the *form of silk* in the silk vessels, and that the spinning apparatus *only winds it*. The thread is produced in the slender posterior part of the vessel, the inflated portion of which consists of the reservoir of ready formed silk, where it is found in the form of a skein; each thread being rolled up so as to occupy in the silk-worm (*Bombex mori*) a space of only about a sixth part of the real length of the skein. The fact is shown by the following experiment I made for the purpose of ascertaining whether the silk is formed in the body of the caterpillars:

"*Take one of the animals when about to form its cocoon, clean it in common vinegar, in which it may remain from four to six hours, open it on the back and extract the silk vessels, there being one on each side of the alimentary canal. Take them up by the hinder end, just where they begin to swell (farther back the silk is not solid enough), and draw them out. The membrane forming the vessel is easily torn open, and the contents expand to six or seven times its original length. The skein having attained its full length by the letting out of its gathers, we obtain a cord perfectly equal in size throughout except at the end, where it is attenuated.* This cord resembles a large horse-hair, and constitutes what fishermen call "*Florence hair.*" I ought to add that in simply drawing out the silk vessel, the Florence hair is found enveloped in a golden yellow gummy matter, forming the glutinous portion which the worm fastens its thread. This must be got rid of by drawing the cord through the fold formed on the inside of the joint of the left fore-finger, converted into a canal by applying to it the end of the thumb. The glutinous substance and the membranes being thus separated we have the *naked hair*. In this state, before the silk becomes dry and hard, not only will it be indefinitely divided longitudinally, which proves its fibrous structure, but in trying to split it by drawing it transversely, *the little filaments of silk which form it are perfectly separated*, making *a bundle of extremely fine fibrils*."

For some beautiful lines, "The Silk Worm's Will," see the Housewife's Department.

COST AND PROFIT OF CULTIVATING CORN AND COTTON:

I PERCEIVE that a good deal has been lately said in Massachusetts about the cost of growing Indian corn, and am not a little surprised to find the expense of cultivating an acre set down by some at $50. I presume a large quantity of manure is used, at an extravagant price. Others estimate the expense at $6 to $7 per acre. This must be where no manure is used.

I have thought it might not be without interest to some of your readers to know what it costs us to grow both corn and cotton here in South Carolina, and to be enabled to form some idea of the profits of *our farming*. Living about the middle line of the State, and cultivating light upland which produces crops about the average of those of this State, and I may add, I think, of Georgia, I will tell you what, *I know*, are the expenses and profits of Agriculture here.

On land *in good heart*, without more manuring than to haul out and put on the poor spots what we make, I may say *casually*, and can spare from our gardens and potato patches, we consider it a very fair average crop to gather from an

acre 10 bushels of corn, or 150 lbs. of (ginned) cotton. As our laborers are almost necessarily engaged for the year, and the work-animals and agricultural implements are owned by the farmer, there may be some difficulty in estimating the cost of any special work. But it is generally agreed, and I think fairly, that a hand including his finding and lost time costs about 50 cts. per day, and a hand and horse $100. In other words, that these sums are about fair daily wages. The expense, then, of cultivating one acre of corn at these rates of wages will be as follows:

To Breaking up	$1 00
" Crossing both ways to plant	25
" Planting	12½
" Replanting and thinning	12½
" Running round corn, 2 furrows	25
" Plowing narrow way, 1 do.	12½
" Plowing out thoroughly, 4 to 5 do.	50
" do. do. do. 2 do.	25
" do. do. do. 2 do. or hoeing to lay by	25
" Gathering fodder and stacking or housing	50
" do. corn, shucking and housing	25
" Rent of land	1 50
Total	$5 12½

This is about the cheapest method I know of cultivating our light upland, and the one I have used with reasonable success for many years. Most planters use more furrows and hoe more also, without, I believe, any compensating increase of production. The land I am speaking of seldom rents for more than $1 per acre. But that is the price of detached fields, and does not include the use of all, generally of none of the necessary buildings of a farm. Besides, to keep this land in good heart, it should be rested at least once in three years; so that I have not over estimated the rent here.

The expenses of cultivating an acre of cotton may be estimated as follows:

To Breaking up	$1 00
" Bedding and preparing for planting	1 00
" Planting	50
" Replanting and thinning	50
" Plowing and scraping at least four times	2 00
" Hoeing do. do.	2 00
" Gathering	2 50
" Ginning, Packing and loss on rope and baggings	1 50
" Rent of land	1 50
Total	$12 50

The fodder gathered from an acre of corn producing 10 bushels, will be about 120 lbs., and may be worth *on the place* $1. The corn to pay wages must then bring about 41 cts. *at the crib*. These are about the prices realized for these articles on the average of the last five years: and should cotton or any other staple for sale abroad continue to be extensively cultivated, they will no doubt be kept up to these points. But any change that would induce a *large* increase of the corn crop under present circumstances, or until our population becomes far denser and our cities much larger and more numerous, would reduce the price to a merely nominal one.

To pay the rate of wages stated, the price of the 150 lbs. of cotton grown on an acre at the estimated cost of $12 50 must be 8 1-3 cts. per lb. net, *at the gin house*. But for five years past the net price at the gin house has scarcely averaged 6 cts., and establishing an annual loss of 25 cts. in its culture in South Carolina and I believe in Georgia.

There is another way in which this matter may be viewed; allowing for Sundays, holidays, rainy days, and sickness, the number of days that a hand will actually work is about 280 per annum; and his wages, therefore, at 50 cts. per day, will be $140 per annum, out of which of course all expenses incurred for his support, for managing work-animals, implements, &c., are to be defrayed: which sum it is thought should be realized to make our Agriculture reasonably profitable. Now the amount of corn necessary and usually grown and consumed on a cotton plantation, is about 80 bushels per hand, which, with the fodder, I have estimated as worth $41. The average production of cotton per hand with us cannot exceed

1200 lbs., which at 6 cts. is worth $72. The whole in a gross income of the hand then, is only $113. And if we allow that in the 280 days, he puts his cotton in market, thereby advancing its price ¼ ct., or $3 on the whole: the gross annual income will be $116, or $24 less than *fair wages* and rent of land.

It is true that some planters in South Carolina and Georgia make more to the acre and to the hand than I have stated. Some make wages and rent; a few perhaps more. But if *on the whole* they lose at present prices, the condition of the country must be growing worse, while those who make less than the average, which is not underrated, I am sure, must be rapidly approaching bankruptcy.

Perhaps I should, before concluding this article, state what are our hopes, and why we do not all in a body fly from our homes and the ruin apparently awaiting us here, to seek the richer soils of the south-west. Our first hope is, that by a chance in the policy of our Government, our expenses will be reduced and the price of our staple enhanced so as to enable us to obtain fair wages for our labor. But as yours is not a political journal I will not enlarge on that exciting topic. Our next hope is that all the planters living near markets, or on navigable streams, and railroads, will grow for market, corn which pays wages now, at least to such an extent as to exclude all corn grown abroad, and corn-fed pork and beef from consumption here. This will increase their profits, and to the extent it may diminish the cotton crop tend to raise the price of it. We hope also that much labor now devoted to cotton in all sections will be diverted to turpentine, tobacco, sugar, rice, timber cutting, manufactures, &c., &c.; so as to reduce the aggregate cotton crop still more. Our last, and perhaps most reliable hope is, that we will cease to clear more land, and by turning our attention seriously to manuring, marling, &c., so increase the production of our acres, that we shall in spite of all competition realize fair rents and wages. This last means of arresting our downward progress each individual can resort to for himself, and by himself, without looking to the action of Government or the community at large for aid: and few, I trust, will fail to do it effectually and speedily. S. B.

The preceding suggests that it ought to be universally regarded as a most essential part of the education of every farmer's and planter's son in the Union; that he should be taught at school, and his father should enforce it by illustration at home—that *keeping exact accounts* of outlay and income, is as indispensable to avoid ruin and bankruptcy in the practice of Agriture as it is in the pursuits of *commerce*, or any other branch of business. An arithmetic is wanting with its rules applicable to, and its examples drawn from agricultural operations. Is there, in short, anything in which so much reform is needed, as in our systems of instruction of American youth destined to rural pursuits? Half their time is spent in learning Latin and Greek, which they forget in fewer years than were required to learn them; and in studying how to "speak the speech" "My name is Norval, on the Grampian hills," &c., and such other recitals of warlike deeds and forensic displays, extracts from which make up our school "Readers," and which serve to pervert and corrupt their youthful imaginations: leading them to dwell on topics and to contemplate ways to advancement and fortune which are utterly incompatible with the real welfare of society in this country! Instead of thus heating their imagination with barbarous thoughts of "bended bow and quiver full of arrows," how much better would it be to teach them the true principles to be sought in the form of domestic animals and in the structure of agricultural implements, and how so to keep accounts of all their operarations, and outlays, in labor and money, thus to be enabled at once to detect any one of those small leaks that often sink great ships. How much better to teach them how to analyze the properties and to understand the force and value of every thing connected with the pursuit which is to be the support and the business of their lives!

Alas! to get for their sons *life commissions*, and high and sure pay in the military; and to qualify them for those parasitical professions that in our *Republican land* lead, with the least labor, to distinction and fortune, seems to be the universal aim; and hence the general tendency to flatter power, and the ready submission to being ridden by demagogues. It is not to be doubted, that many thousand American agriculturists are now on the road, almost in a gallop to ruin, who do not dream of the precipice they are approaching; and all for the want of that

sort of education, which would beget a *habit of thinking*, and a faculty for close and accurate calculation. In this way is it that, every year, swarms continue to leave the parent hives in the old States, without ever dreaming of the true causes and influences by which they were prompted to wing their way to distant wild and unwholesome regions, &c.

This must ever be the case while education instructs in every useless and frivolous thing, rather than in what concerns the *rights and the interests of landholders*; and while landholders allow themselves to be taxed for all sorts of schools and surveys and works, except such as shall teach the rising generation to increase the products of the earth, and provide the means of realizing their value in the best markets, with the least possible deduction being made therefrom, for the support of parasitical classes and interests.

We are reminded here of a statement which has just fallen under our eye in a a work just received, and which so far proves very interesting, on the "Industry of the Rhine." The yearly wages on the Rhine are, for men $25 to $35 per annum—women $20 to $25. The author says, that from official documents, it appears that the *consumption of meat* in the Prussian towns, where a slaughtering tax is levied, and which affords a test for calculation, *rose* on an average in the twelve years, from 1830 to 1842, from 78 5-8 lbs. per head, at which it had stood for the twelve years preceding, up to 83 5-8 lbs. per head—being a fraction less than a quarter of a pound a day. Compare this with a Georgia planter, whose practice may be considered as a fair average—Doctor W., with a family of fifty-two blacks and eight whites, sixty all told, provides six thousand weight of pork and three thousand of beef; being an average of 150 lbs. a year, or as nearly as may be double that which an unprejudiced inquirer sets down as the ascertained average consumption of the white population of Prussia, one of the best governed countries in Europe.

There are many slaves on southern plantations, who make and sell more than the wages of the white laboring women in Europe. Is it then to be wondered at that many thousands arrive here weekly? Who does not see that the number will be increased beyond calculation, as steam in its illimitable progress and influence shall diffuse knowledge and cheapen transportation! But let us return to make the short statement of the produce of an ordinary Rhenish farm of two hundred acres. Be it remembered that their cattle are kept up and soiled, and that they treasure *manure*, as we treasure money, for the reason that they *know it is money*.

"One horse to twenty acres is the proportion of the best farmers; but then fifteen to twenty-five oxen and cows would be the smallest number of horned cattle on one hundred acres, with one or two hundred sheep. On a peasant's farm of fifty acres, we have found four horses, fifteen head of horned cattle, and seventy to eighty sheep."

"In the present style of farming, an estate of two hundred acres in the Duchy of Cleves needs ten men, and ten women or boys, as farm servants. We may assume that four horses, six oxen, fifteen cows, ten pigs, and one hundred sheep are kept. This stock will acquire on a close calculation, ninety acres, together with the stubble turnips of thirty acres of wheat or rye. Thirty acres of wood will give a scanty supply of firing, which will need to be eked out with coals. Ten acres, yielding three hundred bushels of rye, or of equivalents in potatoes and culinary vegetables, are devoted to grow food for the inmates. We have then seventy acres for market crops, with (at Goch) the profit on the sale of milk, fat cattle, wool, clover-seed, linseed, the gain on the brewery and distillery, as the revenue of the land-owner; from which, however, wages, wear and tear of house, offices, and implements, together with building alterations, must be deducted.

The land producing the market crops may therefore be estimated to yield as follows:

20	acres of potatoes	5000 bushels,	at 1s. 6d.	£375	0
20	" barley	650 "	2 0	65	0
20	" wheat	600 "	3 6	105	0
10	" flax or rape	..	..	150	0
20	" clover-seed	80 cwt	at 45 0	180	0
10	" linseed	25 "	30 0	37	10
100	sheep, wool, at 5 lbs.	500 lbs	1 8	42	13
	Total			£955	3
	Deduct interest on £2000 stock		£100		
	Wages		105		
	Repairs of utensils, &c.		50		
	Fuel (coals), veterinary bill, &c.		60		
				310	0
	Total			£645	?

The profit on milk and cattle sold may be set off against the butcher's bill for extraordinaries, and if £45 be estimated to meet the general and local taxes falling on the ground, we see that £600 per annum may be cleared by a farmer who would live with his servants off 200 acres in the Duchy of Cleves. If the farmer keeps a gentleman's establishment united with his farm, he must deduct the expense of it from his gross profit; in doing which it will probably appear that as much comfort and luxury may be purchased for that sum in Germany as £1200 per annum would command in England.

In all calculations of the yield of estates, it is proper (though sometimes omitted) to make full and fair allowance for house-rent, fuel, provisions, washing, and (as far as the farm supplies it) clothing, &c. In other words what, if he stood in the street with the money in his pocket *it would cost him to buy all the conveniences and luxuries which he enjoys on his estate.* In town, he would have to pay for his house and stable the interest of at least $10,000 to begin with, and then he must forego or pay hard money for every radish and strawberry, and every ounce of butter and meat, and bread, and every drop even of the cream he puts without measure in his *country tea and coffee.* Ah, be it remembered after all, that man made the town, while God made the country. Give us the country forever. *Oh fortunatos nimium si sua bona norint agricolas!*

TO RAISE OR BUY HIS BACON:

WHICH IS BEST FOR THE FARMER?—SIZE AND KIND OF HOG BEST SUITED TO IT.

On the Hog.—*Messrs. Fleet & Starr:* At your request I forward you an account of my mode of treating hogs. I have on my farm an orchard, containing many choice fruit-trees, bearing sweet apples. They were planted expressly for hogs, apples being the principal food on which they are fed during the season; sometimes, by way of change, they receive sour apples, always fed raw, at regular hours. The food is occasionally varied by adding garden refuse, such as cabbage-leaves, cauliflower, &c. together with the slops from the house. Unless so fed, a more expensive animal can scarcely be kept, especially in a country where corn can be sold for from 62½ to 75 cents per bushel, and other grain in proportion. This is a luxury my hogs never partake of. If corn and apples were worth the same per bushel, I would feed apples in preference: the pork is sweeter, and fifty per cent. whiter; it may lose a little in boiling; if it does, however, I have never noticed it. They are the most prolific animal we have, producing at a birth numbers varying from six to twelve twice in each year, if found desirable by the owner. In eleven years a single sow, averaging at each litter six pigs, will, in ten generations, produce six millions four hundred and thirty-four thousand eight hundred and thirty-eight pigs. Extend the calculation to the twelfth generation, and the result would be as great a number as all Europe could support, and to the sixteenth generation, the whole world would be overstocked.*

[* The natural term of the hog's life is little known, for the plain reason that every man's hand is raised against him, as if he were *hostis humani generis*, a pirate and an outlaw! But it is related by Rev. Gilbert White on this subject, that a neighbor of his kept a half-bred Bantam sow, "who was as thick as she was long, and whose belly swept the ground until she was seventeen, when she showed some tokens of age by the decay of her teeth and the decline of her fertility, and was then fattened and killed." For ten years she produced two litters annually of about ten and once above twenty at a litter. At a moderate computation, she was allowed to have been the mother of some *three hundred pigs!*

The hog affords a striking example of the effects of emasculation, which, says the same reverend and amiable author, brings man, beast and bird, to a resemblance to the other sex. Thus, eunuchs have smooth, unmuscular arms, thighs and legs; broad hips, and beardless chins, and squeaking voices. Capons have small combs and gills, and have a pallid look, like pullets, about the head; and barrow-hogs have small tusks, like sows; but if left in possession of their masculine faculties unabridged, their tusks, on which they rely as the horseman on his sword, grow to immense size. On our late tour to the South, we were presented with a brace of these warlike weapons, sharp pointed as a Cossack's spear, and curved like a Turkish cimiter. They had been brandished in the days of boarish vigor by a famous grunter, property of Col. Huger, the accomplished and indefatigable Postmaster of Charleston, and were large enough for, and so shaped as to suggest their being made into, handles for horse-whips.

But a certain author on Husbandry carries the mutilation or loss of sexual developments still farther; for he says the loss of the *insignia* alone, is sometimes followed by a loss of the function

When my sows are pregnant they are kept apart from other hogs; at the birth of the young pigs they are removed for a few hours from the dam, as they are in danger of being injured by her motions. She is fed judiciously for the first five days, after which she is allowed a full quantum of food three times each day, but never overfed. Her troughs are cleaned after each meal, and her pen daily, after which it is littered with fine broken straw.

The pigs are daily accustomed to feed on milk mixed with bran, and at the age of two months weaned. They are always kept in confinement, converting rubbish into manure. My second brood of pigs are sent to the New-York market, and are sold to the packets as roasters.

The store hogs are wintered chiefly on sugar-beets and carrots, occasionally boiled potatoes, and frequently charcoal dust, which keeps them in perfect health; their legs are often rubbed with a corn cob, to open the issues and cause the blood to circulate freely, otherwise staggers may ensue. I fatted two hogs year before last entirely on sweet and sour apples, fed alternately. For three or four months they received no other food, except occasionally charcoal; water even was denied them. They weighed, when killed, two hundred and fifty pounds each: the whole hog was covered with a very thick layer of fat, perfectly white and firm; the skin was thin, and the pork pronounced by connoisseurs exceedingly fine and sweet; the hams were not inferior to Westphalia.

This last year, 1845, on the first of October, I confined sixteen hogs in an enclosure about sixty feet square, in one corner of which I placed all my pumice, after having extracted the cider, and permitted the hogs three times each day to partake of it one hour, in which time they completely filled themselves to repletion. They were allowed no other food during October and November. The first week in December they were killed, and fatter animals I never saw. They were sold in New-York for two cents per lb. above the market price. I am, &c. R. L. P.

Editorial Remarks.—We deem the experiments of Mr. Pell of great importance, especially in the older States. If farmers can cultivate fine fruit, send the finest to market, feed the refuse to stock, and thus avoid fattening their hogs, in particular, on grain, a very considerable per centage will be added to the profit of farming. [New-York Farmer and Mechanic.

The question between raising hogs and buying pork is one which admits of and demands nice and cautious calculation. Here, for example, in this essay, the writer says their *principal* food is *apples* "during the season;" but the question arises, What proportion does the season of apples bear to the life-time of the hog? What is the value of land thus appropriated "expressly" to the growth of "sweet apples" for hogs, and the cost or value of other things on which they must live during at least three-fourths of their lifetime, and also of the labor employed in attending them? Then, again, the breeding-sows are to be fed all the year round. There is, in fact, no question of rural economy which, for its solution, depends on so many and such various considerations, before we can decide with confidence and certainty whether it be most economical to buy or rear our own meat.

Generally it is better to breed, raise, and manufacture, as much as possible, within ourselves; because then we are sure that, so far, there is no actual outlay of money; and "a penny saved is two pence got," as Poor Richard says. Yet there is such a thing, and that a very common one, as "saving at the spigot and losing at the bung." In many parts of the country, hogs superinduce the necessity of much additional outlay for fencing. They are, like some men and nations, prone to mischief and depredation, with this exception in their favor, that they wait to be prompted by the stings of hunger, and do not wantonly break through or over, and pass beyond their legitimate bounds. Then, again, as we know, in many parts of the United States, great allowance in the number to be bred and reared to a certain age must be made for thieves, who steal a large proportion; so that out of a given number in the fields and woods, the owner never knows how many he can count upon to kill, until they are "put up" to be fattened, and sometimes not even then. May it not be assumed that the hogs slaughtered in the United States average a consumption of a barrel and a half, or seven bushels and a half, of corn, after they are penned, besides all other expenses, which are numerous and hard to be defined?

There can, we should think, be little doubt, that on every estate there should

itself. He had a boar so fierce and venereous that to prevent mischief his tusks were broken off; no sooner had he suffered this insulting injury than his powers *forsook* him, leading him to turn tail on those females from which no fence could before restrain him. *Ed. Farm. Lib.*]

be a certain number of "sty" hogs to consume the offal of the garden, the truck-patch, the kitchen, the dairy, and the quarters. The number to bear a certain proportion to the number of persons subsisted, and the extent of provision and arrangements for the different objects from which the offal is to be derived. For every one must be aware, that while no good manager on a farm is without abundance of milk, and butter, and a reasonable variety of wholesome and substantial fruits and vegetables, there *are* too many, again, who think of nothing but *money*, and for its sake forego all that money can buy, that is worth having, in the estimation of a reasonable and cultivated mind. Ay, is it not lamentably true, that there are many, very many, large landholders who drudge on through the year, with but a mean, scanty, inadequate supply of milk, butter, vegetables and fruit?—men who do not look ahead and make provision in time for a good, well-filled dairy, orchard, or garden; who are often without a pound of fresh, sweet, fragrant butter; without a nice, clean, cool spring; without an ice-house; without a plate of nice strawberries, or cherries, or apples, or pears, or plums, or grapes, or peaches, or a melon, or raspberry, or vegetables, except, perhaps, a few potatoes or drum-head cabbages, when these are everywhere in full season? —instead of having, of these plain and substantial things, abundance and to spare, for every one, black and white, rich and poor, on his estate! We do not decry such management, or rather gross and scandalous *mis*management, as a thing of rare occurrence, because then, though it might be more pointedly disgraceful to the individual, it would not be a stigma to the neighborhood. We deprecate the neglect to which we refer, as a thing *too common throughout the country*, though less so, we may hope, than it was some years since. Its connection with the subject in hand consists in the consideration that where there is this neglect of gardens, and orchards, and dairies for the sake of exclusive (we had like to have said a vulgar) devotion to a single staple crop, there can be little or no offal for hogs; and even where an orchard of "sweet apples" is planted "expressly" for hogs, it is to be presumed that at the least three-fourths of the time, and as much of the growth and weight of the hog, must otherwise be provided for.

In New-England, it is said that good managers consider the manure to be made by a pen of hogs, kept up through the year, as affording an offset against the expense of keeping them; but this can only be realized, to a certain extent, when the pen is kept well supplied with litter to be compounded with manure, and that, again, can only be done by *labor*, which, like time, is but another word for money.

We remember to have seen, last summer, on the road beyond Newburyport, Mass. a very fat, large hog, which might have stood for a picture of health and obesity. Waiting for the cars, we obtained from the owner a brief history of his life and adventures. These were very simple, resembling very much those of other lazy, fat, uneducated simpletons, who dole out their existence in *eating and sleeping;* but the sum of his big hog's *statistics* was, in the opinion of the owner, that though he had taken all the offal of his house, he "guessed" he had "cost more than he would come to!" so that, after all, "to *buy* or not to buy —that is the question;" and it would be curious to see how the calculation of sagacious men would compare, when made under apparently the same circumstances. Finally, apples may make Yankee "pickled pork" "sweeter and fifty per cent. whiter" than that of corn-fed hogs; but if you would have "hams" made into bacon "not inferior to Westphalia"—and when hams are spoken of, bacon is understood, not pork—let the hogs, according to our observation, which is

"some," have "woods range;" let them roam the forest, enjoying the largest liberty, cracking the beechnut, the chestnut and the acorn, snuffing the pure air and sleeping in the upturned virgin earth of the country, until the middle or last of November; let them be "put up" just long enough to increase and "harden their fat" with new corn, or, yet better, corn meal, with clean water; and having then, at from 14 to 20 months old, carried them to from 130 to 160 pounds, some time before or about Christmas, let their lives be taken, not in wantonness or malice, as men destroy each other in war, but in fulfillment of their appointed fate. The ham of hogs weighing from 130 to 160, will be from 10 to 15 pounds. It was recommended by Col. John Taylor, of Caroline, Virginia, he who prompted the landholders of the Southern States to *think*, and taught them that they had a business to be studied, and a stake in the Government to be cared for—he recommended that at the time of "putting up" hogs in autumn the plantation should be swept clean of every thing in the shape of a hog, little or big, (except the breeding-stock,) which was not under ten months old; as, if over that, and carried through another year, it would not be worth its cost.

A look at the census will show with what remarkable correspondence Indian corn and hogs jump together! In the production of these two great staples of life, Indian corn and pork, Tennessee takes the lead, while New-York produces more than four to one over Tennessee in value of "orchard products." The "swinish multitude" of Tennessee excels that of the great Empire State as 2,926,607 over 1,900,000.

	Bushels of Corn.	*Number of Swine.*
Tennessee	44,986,188	2,926,607
Kentucky	39,847,120	2,310,533
Virginia	34,577,591	1,992,155
Ohio	33,668.144	2,099,746
Indiana	28,155,887	1,623,608
North Carolina	23.893,163	1,649,716
New-York	10,792,286	1,900,065

But it is remarkable in the agricultural economy of New-York, that the number of her swine is much larger than that of other States, in proportion to the quantity of Indian corn she produces, going to show that she turns other resources into pork, which, in other States, do not exist, or are neglected or otherwise disposed of. Many are doubtless reared and sold in New-York when young, on the offal of her dairies and orchards united; for with her only 10,792,286 bushels of corn, she exhibits very nearly 2,000,000 of swine. To her large flour manufactories and their offal, and her vast number of distilleries and breweries, too, may be ascribed her large number of swine in proportion to her corn; for they seem to be to these establishments as natural appendages as to redundant fields of corn. In the number of gallons produced from both distilleries and breweries, New-York claims unenviable excellence over the great corn-growing States above mentioned—as, for instance—

	Distilleries.	*Gallons produced.*	*Breweries.*	*Gallons produced.*
New-York	212	11,973,815	83	6,059,122
Pennsylvania	1,010	6,240,193	87	12,765,974
Virginia	1,454	865,725	5	32,960
North Carolina	2,802	1,05[illegible],979		17,431
Tennessee	1,426	1,109,107	6	1,835
Kentucky	889	1,763,685	50	214,589
Ohio	390	6,329,467	59	1,422,584
Indiana	323	1,787,108	20	188,392

We leave to the moral and curious inquirer to measure the intelligence and refinement of the people in these several States, to see, if practicable, whether there be any connection between the quantity of intoxicating, ardent, and hebe-

tating malt liquors, and the chivalry and social progress of the people. In another paper, this being already spun to a much greater length than we expected, directions that may be fully relied on shall be given for *curing bacon*. In the meantime let those who really wish to know what good "hams" are—not inferior, or but little, to "Westphalia," (for they are "hard to beat,")—let them go in among the snug, quiet, peaceable, orderly, industrious, neat, thrifty, systematic *Quaker* farmers and *housewives* in Montgomery county, Maryland, or among the yet remaining gallant descendants of the old, well-bred, four-in-hand, mint-julep and fox hunting tide-water families in Virginia, and he will then get to know what a *good ham really is!*—a thing never yet made in perfection out of a *swill-tub or a pumice-trough.*

INDIAN CORN.

EXPERIMENTS IN MANUFACTURING CORN MEAL.

JOHN S. SKINNER, Esq. WILMINGTON, June 12th, 1846.

My Dear Sir: Messrs. Tattnal and Lea of the Brandywine mills have just informed me that they have complied with my request and sent to their agents, Messrs. Allen and Paxson, New-York, a small specimen of *white kiln-dried* corn meal, which is at your service to exhibit to the "Farmers' Club," or to experiment with as a Marylander so well knows how, and thus enable him to testify to its merits as an article suitable to the English market, under the favorable prospect of an increased corn trade with that country. The sample sent is by no means as good as may be manufactured when several hundred or thousand bushels are kiln-dried together, as they now do the yellow corn.

The enclosed letter from Mr. James Canby, whose experience reaches to half a century, will not be without its interest at your discussions on corn and corn meal at the "Institute." The long-standing celebrity of the Brandywine mills in the manufacture of flour has not been surpassed by their success, and, indeed, almost monopoly of the kiln-dried corn meal business—for now upward of fifty years.

During the whole of this period, except to the West Indies, and principally in the shape of kiln-dried meal, but comparatively very little of this great and native grain has been exported from the United States to other countries. As a new era is, however, opening upon us, and a requisition is about to be made upon the inexhaustible supplies of Indian Corn which can be produced in our country, every fact in relation to the best kinds, and modes of manufacture adapting it for transportation, are sought after with interest.

The facts I have been enabled to collect principally through the politeness of the Brandywine millers, agreeably to your request, are cheerfully communicated. Those disposed to investigate the numerous varieties of maize grown in our country, can readily be gratified by referring to Emerson's American Encyclopædia, Lorraine's Husbandry, and the pamphlet of Peter A. Brown, Esq. of Philadelphia, on this particular subject. The only reference to varieties necessary to be made in this communication, is to the white and yellow corn of commerce; the best of which will of course be selected to suit the market and taste of the consumer.

Early in the history of our country, you are aware that both public and private attention were directed to the vast importance of this grain—that repeated attempts to rear it in countries uncongenial to its growth have failed, and shipping it abroad in bulk has been nearly abandoned, for the reasons assigned in Mr. Canby's letter; for when it cannot be safely conveyed from New-Orleans to New-York and Boston without heating and injury, it cannot be exported to Liverpool and London, as one or more cargoes recently tried on account of the English government has fully tested. Experience therefore teaches, so far as yet ascertained, that Corn intended for exportation must be *kiln-dried* if *not manufactured* in the country which produces it. This process, I am informed, was attempted in Connecticut at the close of the Revolution, and about the same time

at the Brandywine mills—the Connecticut millers using the *white corn*, and producing an inferior article of meal, owing to want of skill in preparing it and defects in the construction of the kiln. The Brandywine millers perfected their kiln and adopted the *yellow corn* by way of distinction, more for the purpose of signalizing their brand, than any supposed superiority over the white. From greater proficiency in *kiln-drying* and *manufacturing* Meal, they soon engrossed the West India markets for their yellow meal, and thus induced our farmers to grow so extensively here the *yellow corn*. This fact is not generally known, and is interesting in the history of kiln-dried corn meal.

At the several mills on the Brandywine, there are annually thus dried and ground some half-million bushels of corn. It is packed into hogsheads and barrels, and is shipped principally to the West Indies—keeping for a long period perfectly good, and does not appear to be deprived of any of its nutritive properties by having been subjected to heat. Chemical analysis will test this, and can decide the question which of the two is to be preferred—*white or yellow corn.*

Under the auspices of the New-York "Farmers' Club," an important analysis *may be made* of the relative strength and value of the best varieties of our Indian Corn. What better contribution could they make of their time, and money, and talents, hitherto so liberally given to advance the interests not only of Agriculture, but those of manufactures and the mechanic arts?

Truly your friend, JAMES W. THOMSON.

[It appears by the Agricultural Periodical, published by the Government of the United States, under the title of the Patent Office Report, that corn meal is kiln-dried in Ohio by a process which extracts from "12 to 16 pounds of water" from a barrel of meal, and that it is effected by means of "hot air." Mr. Ellsworth says, "There may be seen to be a loss of 12 to 16 pounds of flour; but whenever the flour so treated is made into bread, it reäbsorbs, as might be expected, 12 to 16 pounds more water than common flour; making in a cargo not a small saving, in duties and freight, when sent to foreign markets." This would be true if the freight were paid on the weight. Whether there be any difference, and what, between the yellow and the white corn, *grown in the same*, or between both of them grown in *different regions*, may be worthy of inquiry; but we have supposed that the meal of the one or the other is preferred for table use, according to the fancy or fashion of particular families or neighborhoods—some habitually using the one, some the other, without any solid ground for exclusive preference.

It may be regarded as a real misfortune, that the Corn bought and shipped to England on account of the English Government, should not have been kiln-dried; hence becoming musty and calculated to aggravate the prejudices already existing against that noble grain; but the secrecy which it was probably deemed necessary to practice in the case, perhaps rendered that unavoidable. This necessity to observe the caution of having all exported corn and corn meal kiln-dried, is an important fact and cannot be too widely known. We should have been well pleased if Dr. THOMSON, late President of the Agricultural Society of Newcastle, had described the fixtures and process employed in the operation. The Messrs. Gill, of Ohio, do not wish to disclose their process, "until their patent is secured," which is well enough; but we hope never to see the day when agriculturists shall make a mystery of any machine or process, which, in its operation, is calculated to be beneficial to the public. Such concealment, for selfish purposes, may suit the views of other trades and callings, but is utterly incompatible with that ingenuousness and open-handed dealing which best comports with a pursuit which courts the light under which it is carried on. *Ed. Farm. Lib.*]

MANUFACTURING CORN MEAL FOR EXPORTATION.

WILMINGTON, June 5, 1846.

IN answer to your inquiries respecting corn, or corn meal, as articles of export to England, I can say, after an experience of nearly fifty years in the manufacture of corn, that I am entirely satisfied they cannot have such an article for human food as would be tolerated in this country, in any other way than by taking *meal* manufactured here, instead of *corn* to be manufactured there. From the period of saving the Indian corn crop, until June and July of the ensuing year, it will invariably heat, when permitted to lay any time in bulk, after being taken from the cob—this produces *must* on the hull and heart of the corn, so as seriously to

injure it for purposes of manufacture. It is a fact well known to every farmer in our country, that his corn, if taken from the cob within the period of time mentioned, and put into garners, will become musty, and hence it is an invariable practice with prudent agriculturists, to keep their corn on the cob until sold. How then can it be expected that corn on a voyage often extending to five or six weeks, can be otherwise than injured? A prejudice on that account has been excited in England, against this excellent and nutritious article of food, and it is no uncommon remark from an Englishman, "Our horses will not eat your Indian corn!" It is not strange that *their* horses will not eat *musty* corn—our own horses *will not touch it*, and what is more, even our hogs will not eat it, when materially injured.

The only method to get the article in England *entirely sweet*, is to give orders for *meal*, and not for *corn;* and let those orders be filled by manufacturers of established character—let the meal be branded "Extra Corn Meal for the English Market;" then if orders come *through the same channel*, they will always get an article of *uniform good quality*, ready for cooking in any of the various modes adopted, and so generally approved and admired in this country.

Dr. J. W. THOMSON. With great respect, JAS. CANBY.

THE COAL MINES OF PENNSYLVANIA.

THE READING RAILROAD AND BEAR-MOUNTAIN COAL FIELDS.

AMONG the various industrial resources of our country, probably not one has undergone such extraordinary development as that which has occurred in the last few years in the *coal regions of Pennsylvania.*

Beginning in 1820, with only three hundred and sixty-five tons, as the total of anthracite sent to market from that State, and going up to 1,631,669 tons in 1844, one is amazed at the vast increase, and led at first to wonder for what new and extensive demands it can have been required. The trade has nearly doubled in the last four years. It is probable, indeed, that the Philadelphia, Reading, and Pottsville railroad alone, will this year transport 1,300,000 tons—being more than all the trade in the Union besides; and even at the rate of their present business, (not less, we believe, than 4,000 tons a day,) the supply is restricted much below what would be sent—and for which there is ready and fair demand—for want of adequate means of transport. But no representation, short of an actual view of this vast trade as it is going on, can give an adequate conception of its magnitude and importance, as an element of State riches, and, we may say, of national wealth and power.

The works at Richmond, on the Delaware, a few miles above Philadelphia, are on a grand scale of correspondence with the number and richness of the fields they are intended to accommodate. It is hard to say whether these works are most to be admired for their amplitude, the substantial nature of their construction, or the labor-saving contrivances which enable the company to load and dispatch seventy vessels at a time, should as many be there ready to receive the coal on its arrival, and that without handling from the time it is dug in the mine until it reaches its destination on the wharves, where it is finally sold for consumption.

The whole establishment, the structure of the road and the cars, the amplitude of the dépôt at tide-water, and the whole arrangements and contrivances throughout, to ensure the greatest economy and dispatch, all evince a degree of ingenuity and forecast that reflects great credit on the engineer, president, and officers of the company. If the expenditures have been very large, the results promise full remuneration. The whole concern presents a case illustrative of the truth that the boldest expenditure is often the truest economy.

The coal, on coming up in cars from the mine, is dropped by a slide into the crusher, or grinder, and thence it passes through a sifter, with meshes or sieves of various sizes, like a great bolting-cloth in a flour-mill, through which it is rolled for separation into different classes, falling into as many boxes or partitions—and falls thence again into as many different cars, and is thus transported to the seaboard and shipped as before stated, at tide-water, without being handled until it is in the vessel's hold.

The great object to which this increased consumption is applied, is in the *generation of steam* for the numberless purposes for which that magical power is being every day more and more used.

Let him who thinks he knows something about the coal business of the United States only go, as we did a few weeks since, from Richmond to Pottsville, passing train after train of cars that come rolling along as if the chain were interminable, and, at the end of 100 miles in the gorges of the mountain enter the inexhaustible coal-pits, and he will begin to wake up to some adequate notion of the enterprise and power of a single establishment transporting the products of so many mines, and of the wealth which has been lying there for ages undeveloped in the bowels of the earth.

We have not time now to go into the statistics of this trade, as carried on by the prodigious energy and capacity of this company, nor to do justice to their sagacious and admirable arrangements. Of these we hope to give some account, as connected with the *agricultural interests* of the State; for it is in that light that such enterprises and operations have interest for us. In the meantime a few items in illustration of the coal trade generally, may prove interesting to some of our readers.

We have already stated that the *anthracite coal* trade had risen from a few hundred tons in 1840, to more than a million and a half in 1844. From the Schuylkill region there had come, from 1825 to 1844 by *canal*, altogether, 5,587,-930 tons. By the railroad, which did not go into operation until 1842, there came that year but 49,290 tons, while in 1841, the canal brought 584,692. But in 1844, the railroad transportation had gone up to 441,491 tons, while the canal bore to market only 398,443. The canal is now idle, undergoing repairs and enlargement. In the meantime, the Reading railroad, with indomitable energy, is augmenting its means of transportation, and will this year transport, as before said, 1,300,000 tons.

The price of anthracite in New-York appears to have fallen from $8 or $8 50 per ton—at which it continued from 1838 to 1841—to about $5 50, at which it seems to have settled down since the date last mentioned.

The *anthracite* coal mined in the whole United States, according to the census of 1840, was 863,489 tons, of 28 bushels to the ton. Capital invested, $4,355,-602—employing 3,043 persons. Of this quantity Pennsylvania alone produced 859,688 tons. Of *bituminous*, the quantity was 27,603,191 *bushels*, of which Pennsylvania yielded 11,620,654 bushels, while Virginia produced 10,622,345.

What immense resources does Pennsylvania possess to constitute her, if her means be well and wisely directed—a great and powerful empire in herself!—inexhaustible in her mineral, her coal, and iron, as in her agricultural wealth.—Proud of her preëminence, and strong in her capabilities, she has not a man of true State pride and sound honest heart, who ought not to blush with shame at the very thought and resent with indignation the bare *whisper of repudiation!*—An individual who would refuse to pay the last farthing of his own debts under

like circumstances, would be "put in Coventry" by every gentleman; and what is State honor and State pride but the united character of her sons? The man who is not alive to the character of his State, would patiently bear his own mother to be slandered!

After all, this great element of national wealth is only beginning to be brought into play. As the consumption in 1846 is to that of 1826, so will be the increase of the next, over the last twenty years. It is impossible for the imagination, spread its wings as it may, to keep pace with the *effects of steam* on the *population* and wealth of the world.—*Vires acquint eundo.* Its productive capacity in the saving of *time* and labor, and thus enabling both to be applied with so much more effect to the production of additional means of subsistence, and, of course, to the augmentation of population, may be likened to the fertility of the most prolific seed or animal, going on to increase *ad infinitum* by geometrical progression. Yes, verily, no one has yet approached the effects of the action and reaction—the reciprocal production and demand of coal and steam acting on each other, creating capital which creates demand for manual labor, and without which labor would starve.

But of all the mines yet opened, there is one, the BEAR-MOUNTAIN deposit, which seems to offer the greatest temptation to capitalists who think of embarking their funds in a sort of property which appears to have no end in means of supply and certainty of demand—essential as it is to give development and full efficiency to the great, the wonderful invention of the age—and keeping pace in consumption with the incalculable growth of population, of arts, and of manufactures.

We have neither space nor time, at present, to go into such particulars as might prove interesting to the curious inquirer as to the general industrial resources of his country, with which every American agriculturist ought to desire to be familiar, and yet avoid the minute details which only capitalists seeking investment might wish to know. We expect, however, to be able to present some striking particulars in our next, in regard to the operations and prospects of the works and mines to which we have referred. For the present we must content ourselves with lifting the curtain only so far as to submit the result of a calculation, presented in the "REPORT OF EDWARD F. JOHNSON, Esq., CIVIL ENGINEER." It may serve to set those to thinking, at least, who have made or propose to make investments in coal mines:

"Cost of mining one ton of coal at Bear-Mountain, and delivery at mouth of tunnel	40
Timber for supports, per ton	06
Breaking and screening, do	11
Transportation on railroad, and delivery into the boats on the canal	29
Freight and tolls per ton from Dauphin to Havre-de-Grace, by canal, 80 miles	$1 03
Transportation from Havre-de-Grace to Baltimore, and delivery	35
Add for contingencies and waste, per ton	15
Total to Baltimore	$2 39
Or to Delaware City	2 55

Twenty-five cents per ton added to the latter amount, will probably pay for the delivery of the coal in Philadelphia, making the whole cost to the company but 30 to 50 cents per ton greater than the present price of coal at Pottsville, the source whence most of the anthracite coal which is sent to market is derived. This indicates that the Bear-Mountain coal may be brought into successful competition with the Schuylkill coal, even in the Philadelphia market."

"Midway of the North or Bear-Mountain, and a short distance from the county line of Schuylkill county, is a gap or opening, called Rausch's gap, through which flows northerly from the valley between two mountains, a branch of Pine creek. At this gap the veins of coal and ore in the North mountain are fully exposed, and have been worked, particularly the former, sufficiently to determine their character and value."

It is here that the lands of the Bear-Mountain railroad company are located—

comprising about 5,000 acres, situated nearly in equal portions on each side of the gap, and embracing both mountains.

"And it is from this point that it is proposed to construct a railway, passing southerly through a tunnel of 800 yards in length, to be formed through the South or Big Lick Mountain at its base, thence running southwesterly across Williams' valley, passing clear of the north extremity of Peters' mountain, so called, and pursuing a very direct course over very favorable ground, along the valley of Clark's creek to the canal on the east margin of the Susquehannah river at Dauphin, eight miles above Harrisburg.

"This railroad has been commenced, and about $16,000 have been expended in excavating at the tunnel above mentioned, and in commencing another tunnel of much smaller dimensions near the Susquehannah river. The right of way for the road has been mostly obtained, and the appraised value of the portion not released unconditionally is but $950. The ground at the lower terminus, for a dépôt and canal basin, has also been secured. The total length of the railroad, from Rausch gap to Dauphin, is nearly 30 miles, and 28 miles from the south side of Big Lick mountain, where the coal veins are first entered by it. The road as located has an inclination varying in no part more than a fraction of a foot from seventeen feet per mile, and has no curvature of a less radius than 1,910 feet. The grade line of the road at the canal is 23 feet above the surface of the water in the latter, an elevation sufficient for forming *chutes* or slides for the more convenient transfer of the coal from the cars to the boats. The ground is so favorable at this point, that basins for the mooring of boats, while loading, can easily be formed on either side of the line of the railroad, for a distance of half a mile."

Farther and fuller notice of this great and promising enterprise will be given hereafter. The more delving we can have in the bowels of the earth, the greater will be the demand for that which Agriculture produces on its surface.

In all these fields and developments for the employment of capital, there is this comfort for the farmer—that all those to whom it gives employment must *eat his bread and meat and wear his wool and cotton.*

HOUSEWIFE'S DEPARTMENT.

THE SILK-WORM'S WILL..... BY HANNAH F. GOULD.

On a plain rush hurdle a silk-worm lay,
When a proud young princess came that way:
The haughty child of a human king
Threw a sidelong glance at the humble thing
That took, with a silent gratitude,
From the mulberry leaf her simple food,
And shrunk, half scorn and half disgust,
Away from her sister child of dust—
Declaring she never yet could see
Why a reptile form like this should be,
And that she was not made with nerves so firm
As calmly to stand by a "crawling worm!"

With mute forbearance the silk-worm took
The taunting words and the spurning look:
Alike a stranger to self and pride,
She 'd no disquiet from aught beside;
And lived of a meekness and peace possessed,
Which these debar from the human breast.
She only wished, for the harsh abuse,
To find some way to become of use
To the haughty daughter of lordly man;
And thus did she lay a noble plan
To teach her wisdom, and make it plain
That the humble worm was not made in vain—
A plan so generous, deep, and high,
That, to carry it out, she must even die!

"No more," said she, "will I drink or eat!
I 'll spin and weave me a winding-sheet,
To wrap me up from the sun's clear light,
And hide my form from her wounded sight.
In secret, then, till my end draws nigh,
I 'll toil for her; and, when I die,
I 'll leave behind, as a farewell boon,
To the proud young princess, my whole cocoon,
To be reeled and wove to a shining lace,
And hung in a veil o'er her scornful face!
And when she can calmly draw her breath
Through the very threads that have caused my death—

When she finds, at length, she has nerves so firm
As to wear the shroud of a crawling worm,
May she bear in mind that she walks with pride
In the winding-sheet where the silk-worm died!"

We can speak from personal knowledge of the excellence of "*rice-milk*" cooked after the following directions. So delicious a dish do we know it to be that we could wish every housewife, with whom we may ever have the honor to dine, to be made acquainted with it. But the directions must all be exactly followed:

To Cook Rice Milk.—To three quarts of boiling milk, put a tea-cupfull of rice which has been carefully picked and washed; cook it slowly, but constantly, for four hours before the

fire, in an uncovered vessel; season it with butter, sugar, and cinnamon or nutmeg. The milk must be new, otherwise it will curdle before the rice is cooked.

JUNE 15, 1846.

My Dear Sir: Your favor, postmarked the 8th May, directed to Upper Marlboro', did not reach me till a few days since, or you would have been sooner answered. You ask whether "there is any difference, for nice table bread, between the meal of the white and the yellow—the flint and the softer—corn? and which is preferred by the housewife and the cook?"

There is a great difference; and I never knew it to be questioned that white corn makes always nicer bread than yellow corn. Yellow corn has a strong smell and taste, and is better for stock; it is heavier, has more oil in it, and will yield more to the distiller; but for bread is inferior to the white. Negroes, who are great natural connoisseurs in the preparation of corn bread, will not, except from *dire* necessity, use yellow corn meal. Flint corn makes the best hominy and bread of all kinds of corn. The Calico, or Sioux Indian corn makes the whitest and softest meal, more like wheat flour than any sort of corn coming under my knowledge. It looks so like wheat flour that, without close inspection, you would be deceived as to what it was.

In reply to your other interrogatories, I have been brought to the conclusion that meal may be too closely sifted to make good bread, and that delicate flavor is lost where the corn "has been *too finely* ground." One bushel of corn, after one-eighth has been taken out for toll, should be ground just fine enough to make one bushel of meal, clear of the siftings: this makes it about the right fineness to be prepared into good bread.

You say truly that "*pone* is the only way that corn bread can with satisfaction be eaten *cold*." I send you the following recipes, derived from some of our very best old-time housewives:

JOHNNY OR JOURNEY CAKE.—Sift the meal; add a table-spoonfull of salt and one of lard to one quart of meal; then pour on boiling water slowly, stirring all the time till it becomes well mixed, and of a consistency barely thick enough for the spoon to stand upright in it.—Then spread on the johnny cake board; place it at an angle—say an acute angle—before the fire, but not too near so as to burn. The cake should be spread about a quarter of an inch thick on the board; and, when browned on one side, slip a knife between the board and the cake, and turn it, so that both sides become brown, and then serve it up.

A journey cake board should be of white oak, twenty inches long, five broad, half an inch thick, straight, and perfectly smooth. Put a brick or stone behind it when you set it down before the fire.

THE WAFER JOHNNY CAKE is made just as the above, but you make it very thin by adding more water, and it is spread on the board not more than one-eighth of an inch thick—indeed, as thin as possible—so, when it is done, it has curled up, and is brown and crisp—a mere wafer, that crushes to powder by letting it fall.

COMMON PONE is made as the thick journey cake, only a little stiffer or thicker, as dough, and put in a Dutch oven and baked slowly till it becomes brown, bottom and top.

PONE—Best—(which is intended to be eaten cold at *dinner*.)—One quart of meal, well sifted; one table-spoonfull of salt; pour on boiling water, and stir with a spoon till well mixed into a mush, so that the spoon will not stand upright in it. Put it by the fire, or in some warm place, that it may "lighten," as the *darkies* say, or leaven; and for this purpose it requires from morn till night, or night till morn. When leavened, if too *thin*, stir in a little meal; add a table-spoonfull of lard; pour it in a Dutch oven, and bake it until it is brown, bottom and top. It requires a considerable baking, as it ought to be at least three inches thick and have a thick crust. It is good for days. It will have always a slight acidity about it; but, if it should be *too* sour when you go to bake it, you can add a little saleratus, which will correct it. People who live upon this bread, eaten always cold, with bonnyclabber, will never die of dyspepsia, but will enjoy the greatest of God's blessings—*health*. W.W.W.B.

[A recipe for *this* sort of *pone* bread is exactly what we wanted. It goes back, by association in our minds, to that early period of life, when, of all things on earth, we hate school most, and love hunting best. How could it be that in those days, with the sort of education in vogue, a boy should not have tired at the very thought of school? What was the system? what were the books? The system was one of reserve and rudeness on the part of the master, and of fear and dislike on the part of the boy! The books were, from year's end to year's end, the same—Dilworth's Spelling Book, of which the great value consisted in the *pictures*, such as the man dismounting to whip his faithful old dog, especially if the *horse* was a handsome one—then there was the *English Reader* or *Scott's Lessons*, and

the New Testament. The boy's mind was never refreshed by the consciousness that he was every day making fresh acquisitions of knowledge, as it should be, by instruction in natural history and in things calculated to elucidate and enliven the business and the cares of life—but the pone, such as described, we know to be excellent for *dinner bread*. We did not like it so well when *fried*, and given for breakfast before going to school. "*Wheat* bread" for school, forever. It looks more genteel, too—so at least we used to think.]

OXFORDSHIRE SHEEP:

SHEARING THEM, AND THE WEIGHT OF THE FLEECES.

BY DR. J. W. THOMSON.

JOHN S. SKINNER, Esq. Editor of Farmers' Library: WILMINGTON, Del., May 18, 1846.

My Dear Sir—Having just returned from Maj. Reybold's annual Sheep Shearing of his home flock of some 500 Leicester Sheep, whose fleeces varied from 6 to 8 and 11½ lbs., I cannot forego the gratification of speaking to you particularly of the clip of Mr. Clayton Reybold's two Oxfordshire bucks, selected last year by himself from Mr. Large's flock in England, and, with some six or eight fine ewes, now on Reybold's farm, where of course he is propagating this fine breed, or combing Wool stock with the view of sale, and meeting the demand in the United States of the stuff and Mouslin de Laine manufacturers. Enclosed is a specimen of the Wool of buck A, whose measurement around the body is 7 feet 4½ inches—length from nose to rump, 5 feet—width across the back, *three* feet—aged two years—live weight, 320 lbs. His fleece was tested by a Committee, and weighed 17 lbs. strong weight. Buck B, same age, measured 7 feet in circumference under the shoulders—5 feet 2 inches from nose to rump, and 2 feet 2 inches across the back: weight of fleece, 13 lbs.

The Wool was well washed on their backs a week previous to shearing. I enclose you a sample of this wool, and only regret with the patriarchal Major and his numerous sons and other guests, that you were not present to partake of one of his "fatted lambs." I have, I hope, prevailed upon Mr. Clayton Reybold to exhibit these fleeces, with some of his other fine clips, at the American Fair at Washington. As a more detailed account of this sheep shearing will appear hereafter, I will only add that these last Sheep are fully worth a long ride from any part of our country to see; and in beholding the Major's flocks, the agricultural thrift and improvement of our little State will be fully appreciated.

I hope you got my letter, with one from Maj. Jones, on Drill-Husbandry.—Hoping to see you either at, or going or returning from Washington, I must subscribe myself, hastily, Your sincere friend, JAMES W. THOMSON.

TABLE OF MISCELLANEOUS DENOMINATIONS.

IN copying extracts from foreign works, frequent use is made of terms and denominations with which the American reader is not familiar. Some of these terms are obsolete, but we think best to give them all. The following table will be found useful as a reference in such cases.

A puncheon of prunes	1,120 lbs.	A sack of coals	224 lbs.
A firkin of butter	56 lbs.	A keel	21 tons 4 cwt.
A firkin of soap	64 lbs.	A ship-load	20 keels.
A barrel of potashes	200 lbs.	A hundred of lime	25 bushels.
A barrel of anchovies	30 lbs.	A ton of potatoes	40 do.
A barrel of candles	120 lbs.	A last	80 do.
A fother of lead	19½ cwt.	A pint of butter	1¼ lbs.
A barrel of soap	256 lbs.	A truss of straw	36 lbs.
A barrel of raisins	112 lbs.	A truss of old hay	56 lbs.
A barrel of butter	224 lbs.	A truss of new hay	60 lbs.
A stone of glass	5 lbs.	A load	36 trusses.

A stack of wood	108	feet.
A cord of wood	128	feet.
A hogshead of pilchards (3,000 fish)	40	gallons.
A tun of seed oil	236	gallons.
A tun of fish oil	252	gallons.
A stone of hemp	32	lbs.
A faggot of steel	120	lbs.
A seam of glass	120	lbs.
A load of tiles	1,000	
A load of bricks	500	
A peck of salt	14	lbs.
A peck of flour	14	lbs.
A bushel of flour	56	lbs.
A sack	280	lbs.
A peck loaf	17 lbs.	6 oz.
A quartern loaf	4 lbs.	6½ oz.
A quintal	100	lbs.
A tub of tea	60	lbs.
A chest of tea (about)	84	lbs.
A bag of rice	168	lbs.
A wey of cheese (in Suffolk)	256	lbs.
A wey of cheese (in Essex)	336	lbs.

A wey of corn or cart-load	40	bushels.
A man's load	5	bushels.
A load of lime	20	bushels.
A firkin of beer	9	gallons.
A kilderkin	18	do.
A barrel	36	do.
A hogshead	54	do.
A butt	108	do.
A tierce of wine	42	do.
A puncheon	84	do.
A tun	252	do.
A pipe of Port wine	138	do.
A pipe of Sherry	130	do.
A pipe of Madeira	110	do.
A hogshead of Claret	63	do.
A hogshead of Champagne	63	do.
A load of round timber	40	feet.
A load of hewn timber	50	feet.
A ton of shipping	40	feet.

20 articles is a score.
5 score a hundred.
6 score a great hundred.

PRICES CURRENT.

[Corrected, June 20, for the Monthly Journal of Agriculture.]

ASHES—Pots, 1st sort	℔ 100 lb.	3 50	@ 3 56½
Pearls, 1st sort, '45		4 03	@ 4 06½
BEESWAX—American Yellow		— —	@— —
CANDLES—Mould, Tallow	℔ lb.	— 9	@— 11
Sperm, Eastern and City		— 26	@— 38
COTTON—From	℔ lb.	— 6½	@— 10
COTTON BAGGING—American		— 12	@— 13
CORDAGE—American	℔ lb.	— 11	@— 12
DOMESTIC GOODS—Shirtings	℔ y.	— 5½	@— 11
Sheetings		— 7	@— 15
FEATHERS—American, live		— 25	@— 29
FLAX—American		— 8	@— 8½
FLOUR & MEAL—Genesee	℔ bbl.	4 12½	@ 4 25
Troy		— —	@— —
Michigan		4 —	@ 4 06½
Ohio, flat hoop		4 —	@ 4 06½
Ohio, Heywood & Venice		4 87½	@ 5 12½
Ohio, via New-Orleans		3 50	@ 3 75
Pennsylvania		— —	@— —
Brandywine		4 25	@— —
Georgetown		4 12½	@ 4 25
Baltimore City Mills		4 —	@— —
Richmond City Mills		6 —	@— —
Richmond Country		4 25	@— —
Alexandria, Petersburg, &c		4 —	@— —
Rye Flour		2 50	@ 2 75
Corn Meal, Jersey and Brand		3 —	@ 3 25
Corn Meal, Brandywine	hhd.	15 50	@— —
GRAIN—Wheat, White	℔ bush.	— 95	@ 1 —
Wheat, Red	new	— 80	@— 87½
Rye, Northern		— 63	@— 64
Corn, Jersey and North	(meas.)	— 55	@— 60
Corn, Southern	(measure)	— 50	@— 51
Corn, Southern	(weight)	— —	@— —
Oats, Northern		— 34	@— 35
Oats, Southern		— 26	@— 28
HAY—North River in bales,	℔100 lb	— 45	@— 50
HEMP—American, dew-rotted	ton	80 —	@95 —
" " water-rotted		130 —	@185 —
HOPS—1st sort, 1845		— 18	@— 25
IRON—American Pig, No. 1		34 —	@36 —
" Common		25 —	@— —
LIME—Thomaston	℔ bbl.	— 65	@— —
LUMBER—Boards, N.R.,	℔M. ft. clr.	35 —	@40 —
Boards, Eastern Pine		11 —	@13 —
Boards, Albany Pine	℔pce.	— 10	@— 19
Plank, Georgia Pine	℔M. ft.	32 50	@35 —
Staves, White Oak, pipe,	℔ M.	50 —	@— —
Staves, White Oak, hhd		40 —	@— —
Staves, White Oak, bbl		30 —	@— —
Staves, Red Oak, hhd		24 —	@26 —
Hoops		25 —	@30 —
Scantling, Pine, Eastern		— —	@16 25
Scantling, Oak		30 —	@35 —
Timber, Oak	℔ cubic foot	— 25	@— 37
Timber, White Pine		— 18	@— 25
Timber, Georgia Yellow Pine		— 20	@— —
Shingles, 18 in	℔ bunch	1 75	@ 2 —
Shingles, Cedar, 3 feet, 1st quality		— —	@24 —
Shingles, Cedar, 3 feet, 2d quality		22 —	@23 —
Shingles, Cedar, 2 feet, 1st quality		19 —	@— —
Shingles, Cedar, 2 feet, 2d quality		16 —	@18 —
Shingles, Cypress, 2 feet		13 —	@14 —
Shingles, Company		— —	@29 —
MUSTARD—American		— 16	@— 31
NAILS—Wrought, 6d to 20d	℔ lb.	— 10	@— 12½
Cut 4d to 40d		— 4	@— 4½
PLASTER PARIS—	℔ ton	2 37½	@ 2 62½
PROVISIONS—Beef, Mess,	℔ bbl.	6 50	@ 7 —
Beef, Prime,		4 50	@ 5 —
Pork, Mess, Ohio		10 37½	@10 50
Pork, Prime, Ohio		7 87½	@ 8 —
Lard, Ohio	℔ lb.	— 5½	@— 7
Hams, Pickled		— 4	@— 4½
Shoulders, Pickled		— 3½	@— 3¾
Sides, Pickled		— —	@— —
Beef, Smoked	℔ lb.	— 5	@— 6
Butter, Orange County		— 15	@— 17
Butter, Western Dairy, new,		— 10	@— 14
Butter, grease		— 6½	@— 7
Cheese, in casks and boxes		— 6	@— 7
SEEDS—Clover	℔ lb.	— 6	@— 7½
Timothy	℔ tierce	11 —	@16 —
Flax, Rough		— —	@— —
SOAP—N. York, Brown	℔ lb.	— 4	@— 6
TALLOW—American, Rendered		— 7	@— 7½
TOBACCO—Virginia	@ lb.	— 3	@— 6
North Carolina		— 3	@— 5
Kentucky and Missouri		— 3	@— 7
WOOL—Am. Saxony, Fleece,	℔ lb.	— 36	@— 38
American Full Blood Merino		— 34	@— 36
American ½ and ¾ Merino		— 28	@— 31
American Native and ¼ Merino		— 24	@— 26
Superfine, Pulled		— 27	@— 28